Kvadriky

Vyšetřete kuželosečku o rovnici:

1. $39\,x^2 + 6\,x\,y + 31\,y^2 + 318\,x + 86\,y + 659 = 0$

2. $7\,x^2 + 6\,x\,y + 7\,y^2 + 52\,x - 12\,y + 144 = 0$

3. $25\,x^2 + 36\,x\,y + 40\,y^2 - 106\,x + 140\,y + 532 = 0$

4. $95\,x^2 + 90\,x\,y + 143\,y^2 + 290\,x - 106\,y + 309 = 0$

5. $189\,x^2 - 40\,x\,y + 180\,y^2 + 418\,x - 400\,y + 368 = 0$

6. $11\,x^2 + 4\,x\,y + 14\,y^2 + 46\,x - 128\,y + 344 = 0$

7. $44\,x^2 - 24\,x\,y + 34\,y^2 + 216\,x + 64\,y + 297 = 0$

8. $37\,x^2 - 18\,x\,y + 13\,y^2 + 258\,x - 106\,y + 483 = 0$

9. $57\,x^2 + 40\,x\,y + 66\,y^2 - 182\,x + 408\,y + 1048 = 0$

10. $69\,x^2 - 8\,x\,y + 84\,y^2 + 576\,x - 536\,y + 1939 = 0$

11. $39\,x^2 + 6\,x\,y + 31\,y^2 - 414\,x - 278\,y + 1581 = 0$

12. $89\,x^2 + 120\,x\,y + 116\,y^2 + 476\,x + 472\,y + 671 = 0$

13. $5\,x^2 - 2\,x\,y + 5\,y^2 + 16\,x - 32\,y + 48 = 0$

14. $116\,x^2 - 24\,x\,y + 109\,y^2 + 488\,x - 266\,y + 396 = 0$

15. $7\,x^2 - 2\,x\,y + 7\,y^2 + 46\,x + 62\,y + 229 = 0$

16. $17\,x^2 + 12\,x\,y + 22\,y^2 + 42\,x - 184\,y + 458 = 0$

17. $20\,x^2 - 24\,x\,y + 65\,y^2 - 176\,x + 568\,y + 1210 = 0$

18. $5\,x^2 - 6\,x\,y + 5\,y^2 - 16\,x + 16\,y + 12 = 0$

19. $3\,x^2 - 2\,x\,y + 3\,y^2 + 34\,x - 22\,y + 101 = 0$

20. $189\,x^2 + 40\,x\,y + 180\,y^2 - 1632\,x - 1240\,y + 4919 = 0$

21. $9\,x^2 - 2\,x\,y + 9\,y^2 - 50\,x - 30\,y + 103 = 0$

22. $63\,x^2 + 20\,x\,y + 15\,y^2 + 564\,x + 170\,y + 1305 = 0$

23. $79\,x^2 - 40\,x\,y + 37\,y^2 - 634\,x + 416\,y + 1580 = 0$

24. $24\,x^2 + 4\,x\,y + 21\,y^2 + 196\,x + 58\,y + 401 = 0$

25. $29\,x^2 + 30\,x\,y + 101\,y^2 - 202\,x + 82\,y + 367 = 0$

26. $9\,x^2 - 2\,x\,y + 9\,y^2 + 82\,x + 62\,y + 325 = 0$

27. $43\,x^2 + 30\,x\,y + 59\,y^2 + 580\,x + 740\,y + 2960 = 0$

28. $18\,x^2 - 8\,x\,y + 12\,y^2 + 120\,x + 40\,y + 285 = 0$

29. $35\,x^2 - 12\,x\,y + 30\,y^2 - 316\,x + 228\,y + 896 = 0$

30. $37\,x^2 - 40\,x\,y + 79\,y^2 - 228\,x + 396\,y + 450 = 0$

31. $4\,x^2 - 2\,x\,y + 4\,y^2 - 22\,x - 32\,y + 117 = 0$

32. $76\,x^2 - 30\,x\,y + 60\,y^2 - 850\,x + 510\,y + 2737 = 0$

33. $50\,x^2 - 8\,x\,y + 35\,y^2 + 68\,x + 272\,y + 476 = 0$

34. $21\,x^2 + 32\,x\,y + 81\,y^2 + 232\,x + 452\,y + 899 = 0$

35. $8\,x^2 - 12\,x\,y + 17\,y^2 - 56\,x + 92\,y + 118 = 0$

36. $23\,x^2 + 8\,x\,y + 17\,y^2 - 154\,x - 92\,y + 303 = 0$

37. $77\,x^2 - 72\,x\,y + 98\,y^2 + 452\,x - 536\,y + 813 = 0$

38. $7\,x^2 - 2\,x\,y + 7\,y^2 - 8\,x - 40\,y + 52 = 0$

39. $59\,x^2 + 30\,x\,y + 43\,y^2 + 116\,x - 284\,y + 378 = 0$

40. $93\,x^2 + 30\,x\,y + 77\,y^2 - 654\,x + 342\,y + 1583 = 0$

41. $16\,x^2 + 8\,x\,y + y^2 - 36\,\sqrt{17}x - 26\,\sqrt{17}y + 561 = 0$

42. $4\,x^2 + 16\,x\,y + 16\,y^2 + 24\,\sqrt{5}x + 88\,\sqrt{5}y + 660 = 0$

43. $25\,x^2 - 50\,x\,y + 25\,y^2 - 300\,\sqrt{2}x + 100\,\sqrt{2}y + 1400 = 0$

44. $25\,x^2 - 30\,x\,y + 9\,y^2 + 68\,\sqrt{34}y - 1054 = 0$

45. $4\,x^2 + 8\,x\,y + 4\,y^2 - 8\,\sqrt{2}x + 40\,\sqrt{2}y + 80 = 0$

46. $4\,x^2 - 12\,x\,y + 9\,y^2 - 36\,\sqrt{13}x + 2\,\sqrt{13}y - 403 = 0$

47. $4\,x^2 + 4\,x\,y + y^2 - 24\,\sqrt{5}x + 8\,\sqrt{5}y - 120 = 0$

48. $16\,x^2 + 24\,x\,y + 9\,y^2 + 250\,x + 1150 = 0$

49. $25\,x^2 - 30\,x\,y + 9\,y^2 + 46\,\sqrt{34}x - 14\,\sqrt{34}y + 204 = 0$

50. $16\,x^2 + 32\,x\,y + 16\,y^2 + 224\,\sqrt{2}x + 32\,\sqrt{2}y + 896 = 0$

51. $x^2 - 10\,x\,y + 25\,y^2 - 2\,\sqrt{26}x - 42\,\sqrt{26}y + 208 = 0$

52. $3\,x^2 + 6\,x\,y + 3\,y^2 - 12\,\sqrt{2}x + 36\,\sqrt{2}y - 168 = 0$

53. $x^2 + 8\,x\,y + 16\,y^2 - 44\,\sqrt{17}x - 6\,\sqrt{17}y + 918 = 0$

54. $x^2 + 4\,x\,y + 4\,y^2 + 10\,\sqrt{5}x - 55 = 0$

55. $x^2 - 4\,x\,y + 4\,y^2 + 6\,\sqrt{5}x + 8\,\sqrt{5}y - 95 = 0$

56. $16\,x^2 - 24\,x\,y + 9\,y^2 - 110\,x + 20\,y + 250 = 0$

57. $25\,x^2 - 20\,x\,y + 4\,y^2 + 52\,\sqrt{29}x + 14\,\sqrt{29}y + 116 = 0$

58. $9\,x^2 - 24\,x\,y + 16\,y^2 - 130\,x + 90\,y + 475 = 0$

59. $25\,x^2 - 10\,x\,y + y^2 - 30\,\sqrt{26}x - 46\,\sqrt{26}y - 936 = 0$

60. $25\,x^2 + 40\,x\,y + 16\,y^2 + 42\,\sqrt{41}x - 32\,\sqrt{41}y + 1681 = 0$

61. $9\,x^2 - 6\,x\,y + y^2 + 32\,\sqrt{10}x + 16\,\sqrt{10}y + 320 = 0$

62. $x^2 + 2\,x\,y + y^2 + 10\,\sqrt{2}x - 2\,\sqrt{2}y + 44 = 0$

63. $9\,x^2 + 6\,x\,y + y^2 - 20\,\sqrt{10}x + 190 = 0$

64. $16\,x^2 + 24\,x\,y + 9\,y^2 + 20\,x - 110\,y + 325 = 0$

65. $4\,x^2 + 12\,x\,y + 9\,y^2 - 8\,\sqrt{13}x + 40\,\sqrt{13}y = 0$

66. $9\,x^2 - 30\,x\,y + 25\,y^2 + 2\,\sqrt{34}x - 26\,\sqrt{34}y + 272 = 0$

67. $x^2 - 10\,x\,y + 25\,y^2 + 2\,\sqrt{26}x + 42\,\sqrt{26}y + 260 = 0$

68. $16\,x^2 + 8\,x\,y + y^2 - 22\,\sqrt{17}x - 48\,\sqrt{17}y - 578 = 0$

69. $16\,x^2 - 24\,x\,y + 9\,y^2 - 320\,x - 10\,y - 175 = 0$

70. $4\,x^2 + 8\,x\,y + 4\,y^2 + 32\,\sqrt{2}x - 48\,\sqrt{2}y - 232 = 0$

71. $25\,x^2 - 10\,x\,y + y^2 + 40\,\sqrt{26}x - 60\,\sqrt{26}y - 650 = 0$

72. $9\,x^2 - 24\,x\,y + 16\,y^2 - 130\,x - 160\,y + 1025 = 0$

73. $x^2 - 4\,x\,y + 4\,y^2 + 24\,\sqrt{5}x - 8\,\sqrt{5}y + 160 = 0$

74. $4\,x^2 + 4\,x\,y + y^2 - 14\,\sqrt{5}x - 12\,\sqrt{5}y + 60 = 0$

75. $9\,x^2 - 6\,x\,y + y^2 + 16\,\sqrt{10}x - 12\,\sqrt{10}y + 130 = 0$

76. $9\,x^2 - 30\,x\,y + 25\,y^2 + 26\,\sqrt{34}x + 70\,\sqrt{34}y + 884 = 0$

77. $25\,x^2 - 50\,x\,y + 25\,y^2 - 100\,\sqrt{2}y - 150 = 0$

78. $x^2 - 4\,x\,y + 4\,y^2 - 14\,\sqrt{5}x + 18\,\sqrt{5}y + 175 = 0$

79. $25\,x^2 - 30\,x\,y + 9\,y^2 + 42\,\sqrt{34}x + 2\,\sqrt{34}y - 238 = 0$

80. $25\,x^2 + 10\,x\,y + y^2 + 18\,\sqrt{26}x + 14\,\sqrt{26}y + 312 = 0$
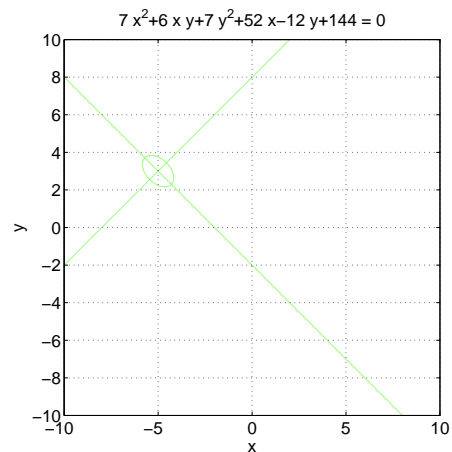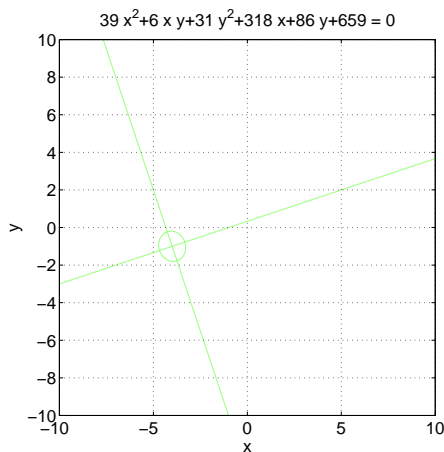
1. Vyšetřete kuželosečku o rovnici:

$$39\,x^2 + 6\,x\,y + 31\,y^2 + 318\,x + 86\,y + 659 = 0$$

$$\mathsf{A} = \begin{pmatrix} 39 & 3 \\ 3 & 31 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -159 \\ -43 \end{pmatrix} \quad c = 659$$

$$\mathsf{D} = \begin{pmatrix} 40 & 0 \\ 0 & 30 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 3/10 \cdot \sqrt{10} & -1/10 \cdot \sqrt{10} \\ 1/10 \cdot \sqrt{10} & 3/10 \cdot \sqrt{10} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -4 \\ -1 \end{pmatrix} \quad \mathsf{f}(\bar{s}) = -20$$

$$\left(\frac{x'}{\sqrt{1/2}} \right)^2 + \left(\frac{y'}{\sqrt{2/3}} \right)^2 = 1$$

---

2. Vyšetřete kuželosečku o rovnici:

$$7\,x^2 + 6\,x\,y + 7\,y^2 + 52\,x - 12\,y + 144 = 0$$

$$\mathsf{A} = \begin{pmatrix} 7 & 3 \\ 3 & 7 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -26 \\ 6 \end{pmatrix} \quad c = 144$$

$$\mathsf{D} = \begin{pmatrix} 4 & 0 \\ 0 & 10 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \\ -1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -5 \\ 3 \end{pmatrix} \quad \mathsf{f}(\bar{s}) = -4$$

$$\left(\frac{x'}{\sqrt{1}} \right)^2 + \left(\frac{y'}{\sqrt{2/5}} \right)^2 = 1$$
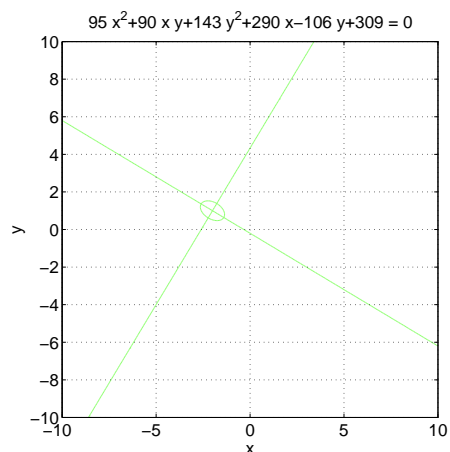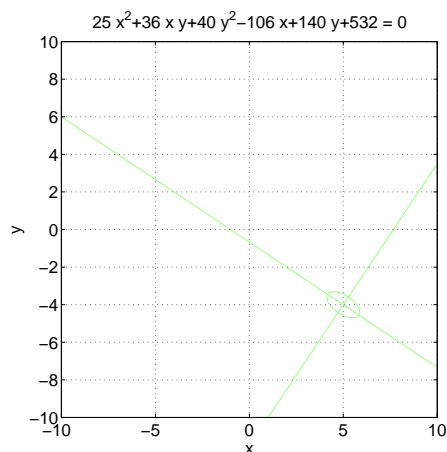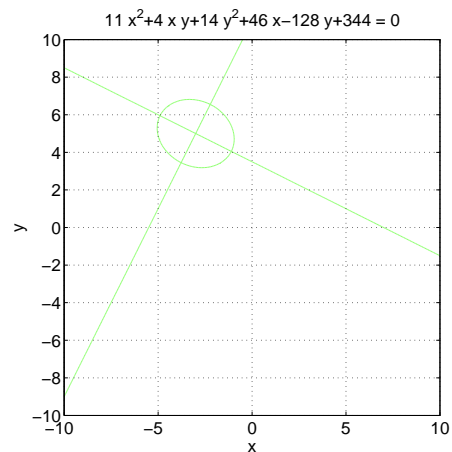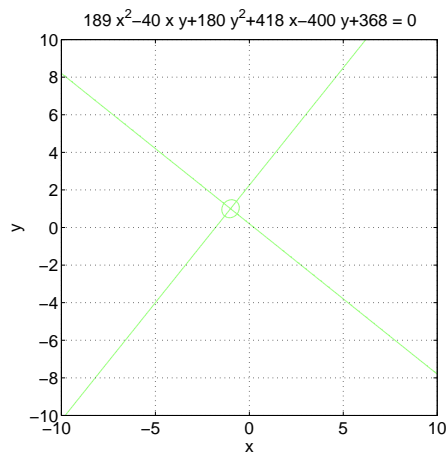
3. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 + 36\,x\,y + 40\,y^2 - 106\,x + 140\,y + 532 = 0$$

$$\mathsf{A} = \begin{pmatrix} 25 & 18 \\ 18 & 40 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} 53 \\ -70 \end{pmatrix} \quad c = 532$$

$$\mathsf{D} = \begin{pmatrix} 13 & 0 \\ 0 & 52 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -3/13 \cdot \sqrt{13} & -2/13 \cdot \sqrt{13} \\ 2/13 \cdot \sqrt{13} & -3/13 \cdot \sqrt{13} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} 5 \\ -4 \end{pmatrix} \quad \mathrm{f}(\overline{s}) = -13$$

$$\left(\frac{x'}{\sqrt{1}} \right)^2 + \left(\frac{y'}{\sqrt{1/4}} \right)^2 = 1$$

---

4. Vyšetřete kuželosečku o rovnici:

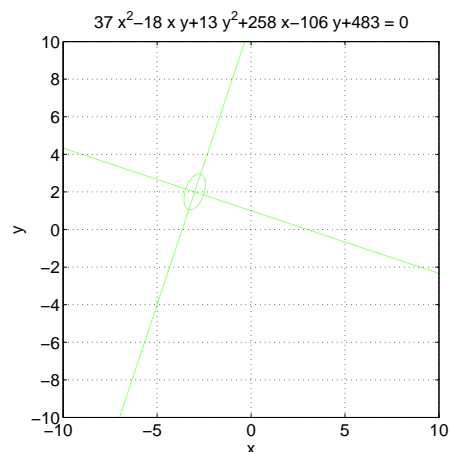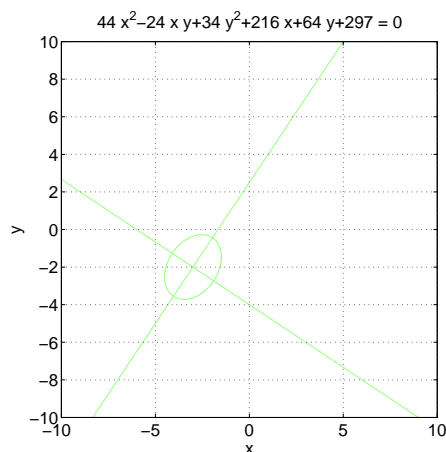$$95\,x^2 + 90\,x\,y + 143\,y^2 + 290\,x - 106\,y + 309 = 0$$

$$\mathsf{A} = \begin{pmatrix} 95 & 45 \\ 45 & 143 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} -145 \\ 53 \end{pmatrix} \quad c = 309$$

$$\mathsf{D} = \begin{pmatrix} 170 & 0 \\ 0 & 68 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{3}{34} \cdot \sqrt{34} & \frac{5}{34} \cdot \sqrt{34} \\ -\frac{5}{34} \cdot \sqrt{34} & -\frac{3}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} -2 \\ 1 \end{pmatrix} \quad \mathrm{f}(\overline{s}) = -34$$

$$\left(\frac{x'}{\sqrt{1/5}} \right)^2 + \left(\frac{y'}{\sqrt{1/2}} \right)^2 = 1$$

189 x²−40 x y+180 y²+418 x−400 y+368 = 0

11 x²+4 x y+14 y²+46 x−128 y+344 = 0

5. Vyšetřete kuželosečku o rovnici:

$$189\,x^2 - 40\,x\,y + 180\,y^2 + 418\,x - 400\,y + 368 = 0$$

$$\mathsf{A} = \begin{pmatrix} 189 & -20 \\ -20 & 180 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -209 \\ 200 \end{pmatrix} \quad c = 368$$

$$\mathsf{D} = \begin{pmatrix} 205 & 0 \\ 0 & 164 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{41} \cdot \sqrt{41} & -\frac{4}{41} \cdot \sqrt{41} \\ \frac{4}{41} \cdot \sqrt{41} & -\frac{5}{41} \cdot \sqrt{41} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -1 \\ 1 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -41$$

$$\left(\frac{x'}{\sqrt{1/5}}\right)^2 + \left(\frac{y'}{\sqrt{1/4}}\right)^2 = 1$$
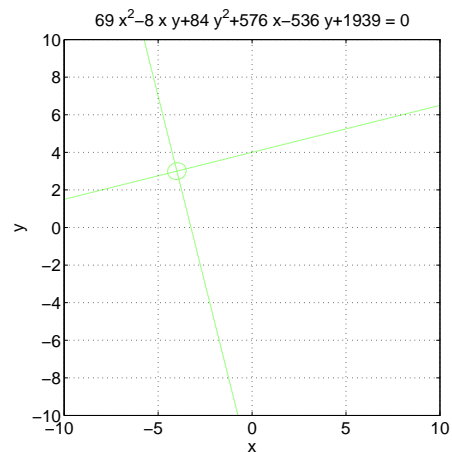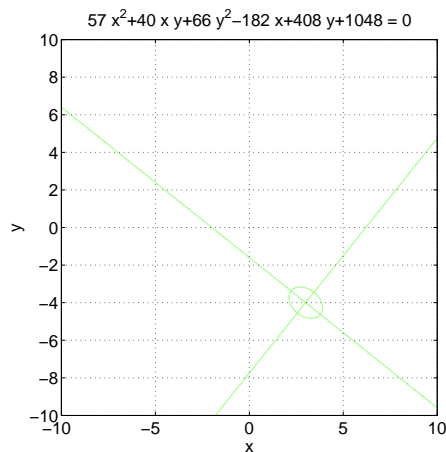
---

6. Vyšetřete kuželosečku o rovnici:

$$11\,x^2 + 4\,x\,y + 14\,y^2 + 46\,x - 128\,y + 344 = 0$$

$$\mathsf{A} = \begin{pmatrix} 11 & 2 \\ 2 & 14 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -23 \\ 64 \end{pmatrix} \quad c = 344$$

$$\mathsf{D} = \begin{pmatrix} 15 & 0 \\ 0 & 10 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/5 \cdot \sqrt{5} & -2/5 \cdot \sqrt{5} \\ 2/5 \cdot \sqrt{5} & 1/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -3 \\ 5 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -45$$

$$\left(\frac{x'}{\sqrt{3}}\right)^2 + \left(\frac{y'}{\sqrt{9/2}}\right)^2 = 1$$

$44\,x^2{-}24\,x\,y{+}34\,y^2{+}216\,x{+}64\,y{+}297 = 0$

$37\,x^2{-}18\,x\,y{+}13\,y^2{+}258\,x{-}106\,y{+}483 = 0$

7. Vyšetřete kuželosečku o rovnici:

$$44\,x^2 - 24\,x\,y + 34\,y^2 + 216\,x + 64\,y + 297 = 0$$

$$\mathsf{A} = \begin{pmatrix} 44 & -12 \\ -12 & 34 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -108 \\ -32 \end{pmatrix} \quad c = 297$$

$$\mathsf{D} = \begin{pmatrix} 52 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 3/13 \cdot \sqrt{13} & 2/13 \cdot \sqrt{13} \\ -2/13 \cdot \sqrt{13} & 3/13 \cdot \sqrt{13} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -3 \\ -2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -91$$

$$\left(\frac{x'}{\sqrt{7/4}} \right)^2 + \left(\frac{y'}{\sqrt{7/2}} \right)^2 = 1$$
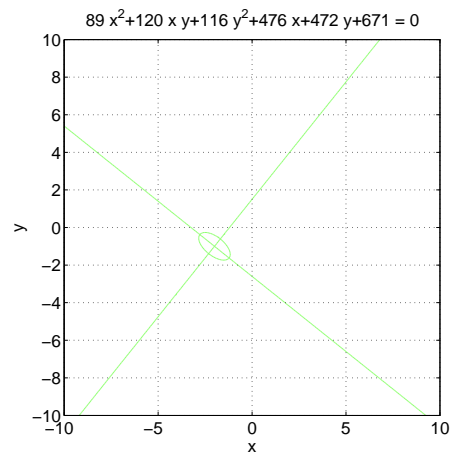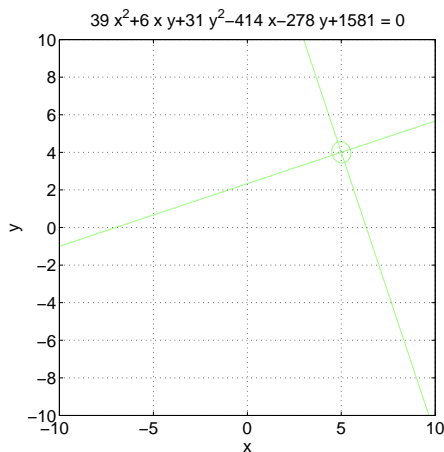
8. Vyšetřete kuželosečku o rovnici:

$$37\,x^2 - 18\,x\,y + 13\,y^2 + 258\,x - 106\,y + 483 = 0$$

$$\mathsf{A} = \begin{pmatrix} 37 & -9 \\ -9 & 13 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -129 \\ 53 \end{pmatrix} \quad c = 483$$

$$\mathsf{D} = \begin{pmatrix} 40 & 0 \\ 0 & 10 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 3/10 \cdot \sqrt{10} & 1/10 \cdot \sqrt{10} \\ -1/10 \cdot \sqrt{10} & 3/10 \cdot \sqrt{10} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -3 \\ 2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -10$$

$$\left(\frac{x'}{\sqrt{1/4}} \right)^2 + \left(\frac{y'}{\sqrt{1}} \right)^2 = 1$$

57 x²+40 x y+66 y²−182 x+408 y+1048 = 0

69 x²−8 x y+84 y²+576 x−536 y+1939 = 0

9. Vyšetřete kuželosečku o rovnici:

$$57\,x^2 + 40\,x\,y + 66\,y^2 - 182\,x + 408\,y + 1048 = 0$$

$$\mathsf{A} = \begin{pmatrix} 57 & 20 \\ 20 & 66 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} 91 \\ -204 \end{pmatrix} \quad c = 1048$$

$$\mathsf{D} = \begin{pmatrix} 82 & 0 \\ 0 & 41 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} \frac{4}{41} \cdot \sqrt{41} & -\frac{5}{41} \cdot \sqrt{41} \\ \frac{5}{41} \cdot \sqrt{41} & \frac{4}{41} \cdot \sqrt{41} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} 3 \\ -4 \end{pmatrix} \quad \mathsf{f}(\overline{s}) = -41$$

$$\left(\frac{x'}{\sqrt{1/2}} \right)^2 + \left(\frac{y'}{\sqrt{1}} \right)^2 = 1$$
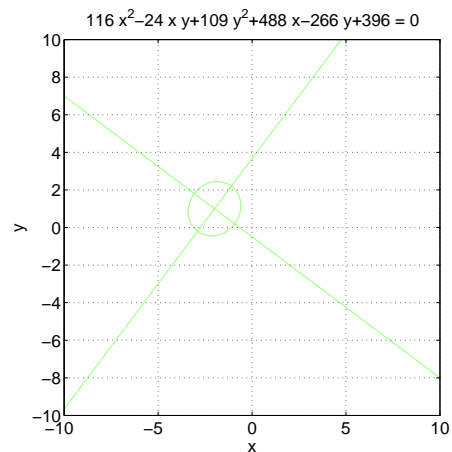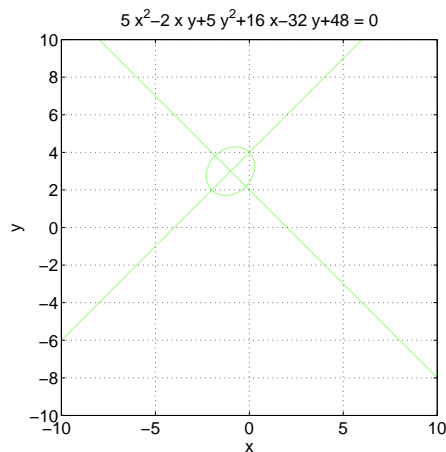
---

10. Vyšetřete kuželosečku o rovnici:

$$69\,x^2 - 8\,x\,y + 84\,y^2 + 576\,x - 536\,y + 1939 = 0$$

$$\mathsf{A} = \begin{pmatrix} 69 & -4 \\ -4 & 84 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} -288 \\ 268 \end{pmatrix} \quad c = 1939$$

$$\mathsf{D} = \begin{pmatrix} 85 & 0 \\ 0 & 68 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/17 \cdot \sqrt{17} & \frac{4}{17} \cdot \sqrt{17} \\ -\frac{4}{17} \cdot \sqrt{17} & 1/17 \cdot \sqrt{17} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} -4 \\ 3 \end{pmatrix} \quad \mathsf{f}(\overline{s}) = -17$$

$$\left(\frac{x'}{\sqrt{1/5}} \right)^2 + \left(\frac{y'}{\sqrt{1/4}} \right)^2 = 1$$

$39\,x^2{+}6\,x\,y{+}31\,y^2{-}414\,x{-}278\,y{+}1581 = 0$

$89\,x^2{+}120\,x\,y{+}116\,y^2{+}476\,x{+}472\,y{+}671 = 0$

11. Vyšetřete kuželosečku o rovnici:

$$39\,x^2 + 6\,x\,y + 31\,y^2 - 414\,x - 278\,y + 1581 = 0$$

$$\mathsf{A} = \begin{pmatrix} 39 & 3 \\ 3 & 31 \end{pmatrix} \qquad \bar{b} = \begin{pmatrix} 207 \\ 139 \end{pmatrix} \qquad c = 1581$$

$$\mathsf{D} = \begin{pmatrix} 40 & 0 \\ 0 & 30 \end{pmatrix} \qquad \mathsf{X} = \begin{pmatrix} 3/10 \cdot \sqrt{10} & -1/10 \cdot \sqrt{10} \\ 1/10 \cdot \sqrt{10} & 3/10 \cdot \sqrt{10} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 5 \\ 4 \end{pmatrix} \qquad \mathrm{f}(\bar{s}) = -10$$

$$\left(\frac{x'}{\sqrt{1/4}} \right)^2 + \left(\frac{y'}{\sqrt{1/3}} \right)^2 = 1$$
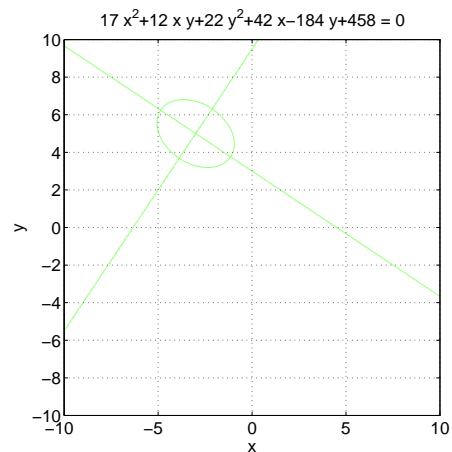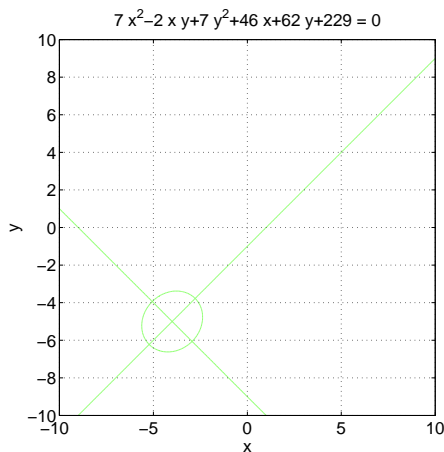
---

12. Vyšetřete kuželosečku o rovnici:

$$89\,x^2 + 120\,x\,y + 116\,y^2 + 476\,x + 472\,y + 671 = 0$$

$$\mathsf{A} = \begin{pmatrix} 89 & 60 \\ 60 & 116 \end{pmatrix} \qquad \bar{b} = \begin{pmatrix} -238 \\ -236 \end{pmatrix} \qquad c = 671$$

$$\mathsf{D} = \begin{pmatrix} 41 & 0 \\ 0 & 164 \end{pmatrix} \qquad \mathsf{X} = \begin{pmatrix} -\frac{5}{41} \cdot \sqrt{41} & -\frac{4}{41} \cdot \sqrt{41} \\ \frac{4}{41} \cdot \sqrt{41} & -\frac{5}{41} \cdot \sqrt{41} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -2 \\ -1 \end{pmatrix} \qquad \mathrm{f}(\bar{s}) = -41$$

$$\left(\frac{x'}{\sqrt{1}} \right)^2 + \left(\frac{y'}{\sqrt{1/4}} \right)^2 = 1$$

5 x²–2 x y+5 y²+16 x–32 y+48 = 0

116 x²–24 x y+109 y²+488 x–266 y+396 = 0

13. Vyšetřete kuželosečku o rovnici:

$$5\,x^2 - 2\,x\,y + 5\,y^2 + 16\,x - 32\,y + 48 = 0$$

$$\mathsf{A} = \begin{pmatrix} 5 & -1 \\ -1 & 5 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -8 \\ 16 \end{pmatrix} \quad c = 48$$

$$\mathsf{D} = \begin{pmatrix} 4 & 0 \\ 0 & 6 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -1 \\ 3 \end{pmatrix} \quad \mathsf{f}(\bar{s}) = -8$$

$$\left(\frac{x'}{\sqrt{2}} \right)^2 + \left(\frac{y'}{\sqrt{4/3}} \right)^2 = 1$$
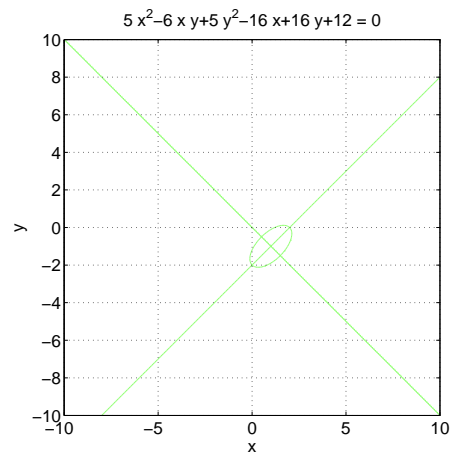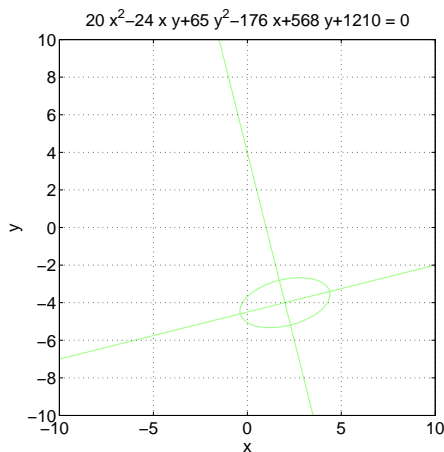
14. Vyšetřete kuželosečku o rovnici:

$$116\,x^2 - 24\,x\,y + 109\,y^2 + 488\,x - 266\,y + 396 = 0$$

$$\mathsf{A} = \begin{pmatrix} 116 & -12 \\ -12 & 109 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -244 \\ 133 \end{pmatrix} \quad c = 396$$

$$\mathsf{D} = \begin{pmatrix} 125 & 0 \\ 0 & 100 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -4/5 & -3/5 \\ 3/5 & -4/5 \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -2 \\ 1 \end{pmatrix} \quad \mathsf{f}(\bar{s}) = -225$$

$$\left(\frac{x'}{\sqrt{9/5}} \right)^2 + \left(\frac{y'}{\sqrt{9/4}} \right)^2 = 1$$

$$7\,x^2 - 2\,x\,y + 7\,y^2 + 46\,x + 62\,y + 229 = 0$$

$$17\,x^2 + 12\,x\,y + 22\,y^2 + 42\,x - 184\,y + 458 = 0$$

15. Vyšetřete kuželosečku o rovnici:

$$7\,x^2 - 2\,x\,y + 7\,y^2 + 46\,x + 62\,y + 229 = 0$$

$$\mathsf{A} = \begin{pmatrix} 7 & -1 \\ -1 & 7 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -23 \\ -31 \end{pmatrix} \quad c = 229$$

$$\mathsf{D} = \begin{pmatrix} 8 & 0 \\ 0 & 6 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -4 \\ -5 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -18$$

$$\left(\frac{x'}{\sqrt{9/4}} \right)^2 + \left(\frac{y'}{\sqrt{3}} \right)^2 = 1$$

---

16. Vyšetřete kuželosečku o rovnici:

$$17\,x^2 + 12\,x\,y + 22\,y^2 + 42\,x - 184\,y + 458 = 0$$

$$\mathsf{A} = \begin{pmatrix} 17 & 6 \\ 6 & 22 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -21 \\ 92 \end{pmatrix} \quad c = 458$$

$$\mathsf{D} = \begin{pmatrix} 13 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 3/13 \cdot \sqrt{13} & 2/13 \cdot \sqrt{13} \\ -2/13 \cdot \sqrt{13} & 3/13 \cdot \sqrt{13} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -3 \\ 5 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -65$$

$$\left(\frac{x'}{\sqrt{5}} \right)^2 + \left(\frac{y'}{\sqrt{5/2}} \right)^2 = 1$$
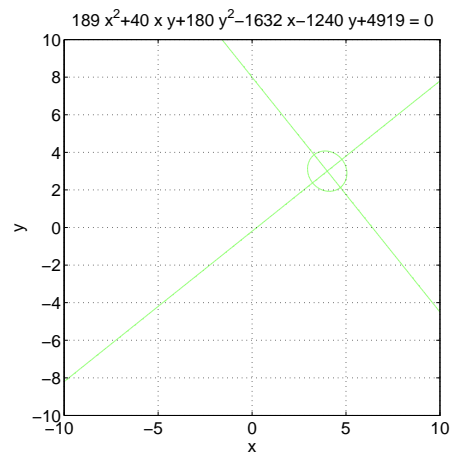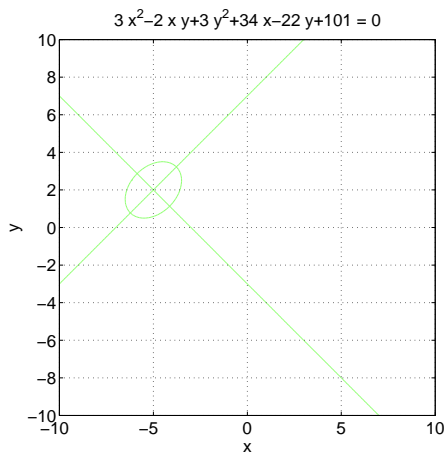
17. Vyšetřete kuželosečku o rovnici:

$$20\,x^2 - 24\,x\,y + 65\,y^2 - 176\,x + 568\,y + 1210 = 0$$

$$\mathsf{A} = \begin{pmatrix} 20 & -12 \\ -12 & 65 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 88 \\ -284 \end{pmatrix} \quad c = 1210$$

$$\mathsf{D} = \begin{pmatrix} 68 & 0 \\ 0 & 17 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/17 \cdot \sqrt{17} & -\frac{4}{17} \cdot \sqrt{17} \\ \frac{4}{17} \cdot \sqrt{17} & -1/17 \cdot \sqrt{17} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 2 \\ -4 \end{pmatrix} \quad \mathsf{f}(\bar{s}) = -102$$

$$\left(\frac{x'}{\sqrt{3/2}} \right)^2 + \left(\frac{y'}{\sqrt{6}} \right)^2 = 1$$

18. Vyšetřete kuželosečku o rovnici:

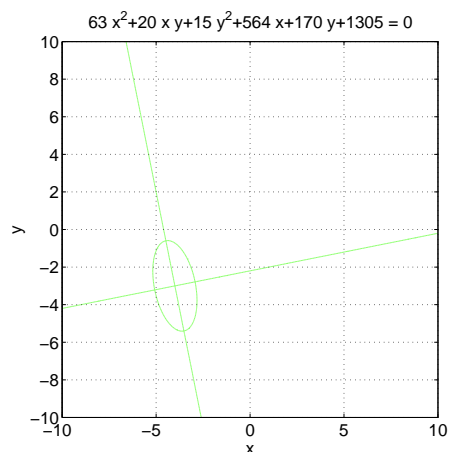$$5\,x^2 - 6\,x\,y + 5\,y^2 - 16\,x + 16\,y + 12 = 0$$

$$\mathsf{A} = \begin{pmatrix} 5 & -3 \\ -3 & 5 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 8 \\ -8 \end{pmatrix} \quad c = 12$$

$$\mathsf{D} = \begin{pmatrix} 8 & 0 \\ 0 & 2 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \\ -1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 1 \\ -1 \end{pmatrix} \quad \mathsf{f}(\bar{s}) = -4$$

$$\left(\frac{x'}{\sqrt{1/2}} \right)^2 + \left(\frac{y'}{\sqrt{2}} \right)^2 = 1$$

$3\,x^2 - 2\,x\,y + 3\,y^2 + 34\,x - 22\,y + 101 = 0$

$189\,x^2 + 40\,x\,y + 180\,y^2 - 1632\,x - 1240\,y + 4919 = 0$

19. Vyšetřete kuželosečku o rovnici:

$$3\,x^2 - 2\,x\,y + 3\,y^2 + 34\,x - 22\,y + 101 = 0$$

$$\mathsf{A} = \begin{pmatrix} 3 & -1 \\ -1 & 3 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -17 \\ 11 \end{pmatrix} \quad c = 101$$

$$\mathsf{D} = \begin{pmatrix} 2 & 0 \\ 0 & 4 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -5 \\ 2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -6$$

$$\left(\frac{x'}{\sqrt{3}} \right)^2 + \left(\frac{y'}{\sqrt{3/2}} \right)^2 = 1$$
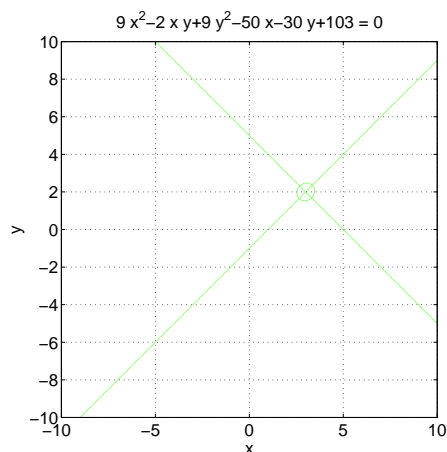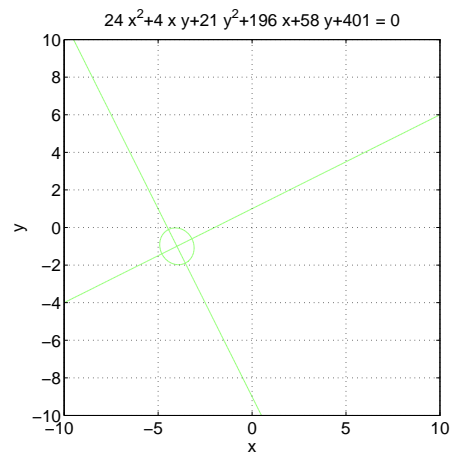
20. Vyšetřete kuželosečku o rovnici:

$$189\,x^2 + 40\,x\,y + 180\,y^2 - 1632\,x - 1240\,y + 4919 = 0$$

$$\mathsf{A} = \begin{pmatrix} 189 & 20 \\ 20 & 180 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 816 \\ 620 \end{pmatrix} \quad c = 4919$$

$$\mathsf{D} = \begin{pmatrix} 164 & 0 \\ 0 & 205 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} \frac{4}{41} \cdot \sqrt{41} & \frac{5}{41} \cdot \sqrt{41} \\ -\frac{5}{41} \cdot \sqrt{41} & \frac{4}{41} \cdot \sqrt{41} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 4 \\ 3 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -205$$

$$\left(\frac{x'}{\sqrt{5/4}} \right)^2 + \left(\frac{y'}{\sqrt{1}} \right)^2 = 1$$

$9\,x^2{-}2\,x\,y{+}9\,y^2{-}50\,x{-}30\,y{+}103 = 0$

$63\,x^2{+}20\,x\,y{+}15\,y^2{+}564\,x{+}170\,y{+}1305 = 0$

21. Vyšetřete kuželosečku o rovnici:

$$9\,x^2 - 2\,x\,y + 9\,y^2 - 50\,x - 30\,y + 103 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -1 \\ -1 & 9 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 25 \\ 15 \end{pmatrix} \quad c = 103$$

$$\mathsf{D} = \begin{pmatrix} 8 & 0 \\ 0 & 10 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \\ -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 3 \\ 2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -2$$

$$\left(\frac{x'}{\sqrt{1/4}}\right)^2 + \left(\frac{y'}{\sqrt{1/5}}\right)^2 = 1$$
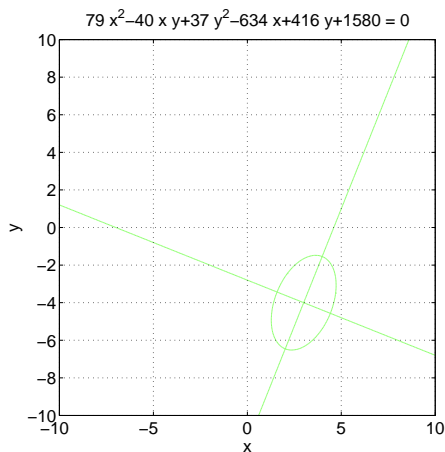
---

22. Vyšetřete kuželosečku o rovnici:

$$63\,x^2 + 20\,x\,y + 15\,y^2 + 564\,x + 170\,y + 1305 = 0$$

$$\mathsf{A} = \begin{pmatrix} 63 & 10 \\ 10 & 15 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -282 \\ -85 \end{pmatrix} \quad c = 1305$$

$$\mathsf{D} = \begin{pmatrix} 65 & 0 \\ 0 & 13 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{26} \cdot \sqrt{26} & 1/26 \cdot \sqrt{26} \\ -1/26 \cdot \sqrt{26} & -\frac{5}{26} \cdot \sqrt{26} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -4 \\ -3 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -78$$

$$\left(\frac{x'}{\sqrt{6/5}}\right)^2 + \left(\frac{y'}{\sqrt{6}}\right)^2 = 1$$

$79\,x^2-40\,x\,y+37\,y^2-634\,x+416\,y+1580=0$

$24\,x^2+4\,x\,y+21\,y^2+196\,x+58\,y+401=0$

23. Vyšetřete kuželosečku o rovnici:

$$79\,x^2 - 40\,x\,y + 37\,y^2 - 634\,x + 416\,y + 1580 = 0$$

$$\mathsf{A} = \begin{pmatrix} 79 & -20 \\ -20 & 37 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 317 \\ -208 \end{pmatrix} \quad c = 1580$$

$$\mathsf{D} = \begin{pmatrix} 87 & 0 \\ 0 & 29 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} \frac{5}{29}\cdot\sqrt{29} & \frac{2}{29}\cdot\sqrt{29} \\ -\frac{2}{29}\cdot\sqrt{29} & \frac{5}{29}\cdot\sqrt{29} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 3 \\ -4 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -203$$

$$\left(\frac{x'}{\sqrt{7/3}}\right)^2 + \left(\frac{y'}{\sqrt{7}}\right)^2 = 1$$
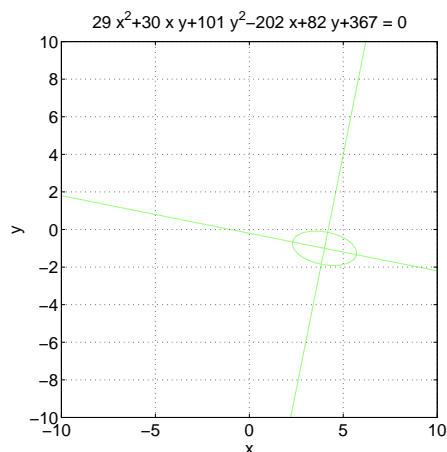
24. Vyšetřete kuželosečku o rovnici:

$$24\,x^2 + 4\,x\,y + 21\,y^2 + 196\,x + 58\,y + 401 = 0$$

$$\mathsf{A} = \begin{pmatrix} 24 & 2 \\ 2 & 21 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -98 \\ -29 \end{pmatrix} \quad c = 401$$

$$\mathsf{D} = \begin{pmatrix} 20 & 0 \\ 0 & 25 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/5\cdot\sqrt{5} & -2/5\cdot\sqrt{5} \\ 2/5\cdot\sqrt{5} & -1/5\cdot\sqrt{5} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -4 \\ -1 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -20$$

$$\left(\frac{x'}{\sqrt{1}}\right)^2 + \left(\frac{y'}{\sqrt{4/5}}\right)^2 = 1$$
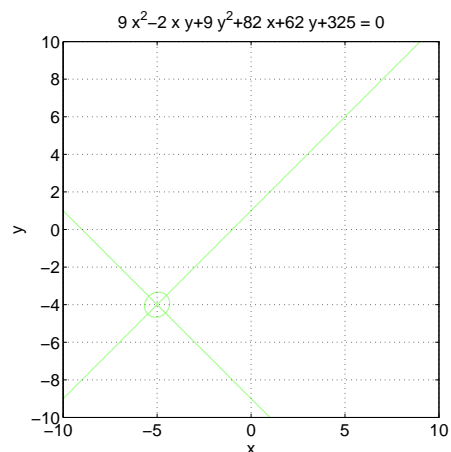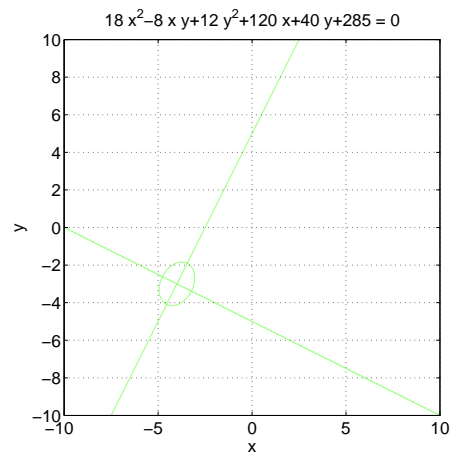
25. Vyšetřete kuželosečku o rovnici:

$$29\,x^2 + 30\,x\,y + 101\,y^2 - 202\,x + 82\,y + 367 = 0$$

$$\mathsf{A} = \begin{pmatrix} 29 & 15 \\ 15 & 101 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 101 \\ -41 \end{pmatrix} \quad c = 367$$

$$\mathsf{D} = \begin{pmatrix} 104 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/26 \cdot \sqrt{26} & -\frac{5}{26} \cdot \sqrt{26} \\ \frac{5}{26} \cdot \sqrt{26} & 1/26 \cdot \sqrt{26} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 4 \\ -1 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -78$$

$$\left(\frac{x'}{\sqrt{3/4}} \right)^2 + \left(\frac{y'}{\sqrt{3}} \right)^2 = 1$$

26. Vyšetřete kuželosečku o rovnici:

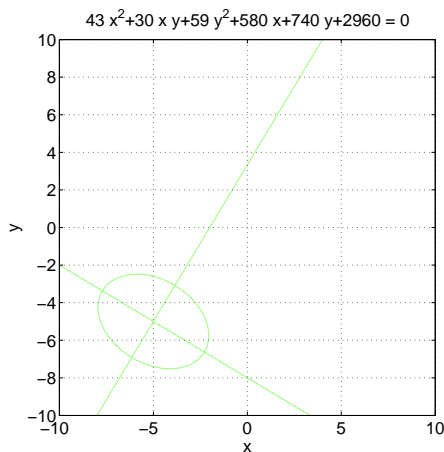$$9\,x^2 - 2\,x\,y + 9\,y^2 + 82\,x + 62\,y + 325 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -1 \\ -1 & 9 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -41 \\ -31 \end{pmatrix} \quad c = 325$$

$$\mathsf{D} = \begin{pmatrix} 10 & 0 \\ 0 & 8 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -5 \\ -4 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -4$$

$$\left(\frac{x'}{\sqrt{2/5}} \right)^2 + \left(\frac{y'}{\sqrt{1/2}} \right)^2 = 1$$

43 x²+30 x y+59 y²+580 x+740 y+2960 = 0

18 x²−8 x y+12 y²+120 x+40 y+285 = 0

27. Vyšetřete kuželosečku o rovnici:

$$43\,x^2 + 30\,x\,y + 59\,y^2 + 580\,x + 740\,y + 2960 = 0$$

$$\mathsf{A} = \begin{pmatrix} 43 & 15 \\ 15 & 59 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} -290 \\ -370 \end{pmatrix} \quad c = 2960$$

$$\mathsf{D} = \begin{pmatrix} 68 & 0 \\ 0 & 34 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{3}{34} \cdot \sqrt{34} & \frac{5}{34} \cdot \sqrt{34} \\ -\frac{5}{34} \cdot \sqrt{34} & -\frac{3}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} -5 \\ -5 \end{pmatrix} \quad \mathsf{f}(\overline{s}) = -340$$

$$\left(\frac{x'}{\sqrt{5}}\right)^2 + \left(\frac{y'}{\sqrt{10}}\right)^2 = 1$$

---

28. Vyšetřete kuželosečku o rovnici:

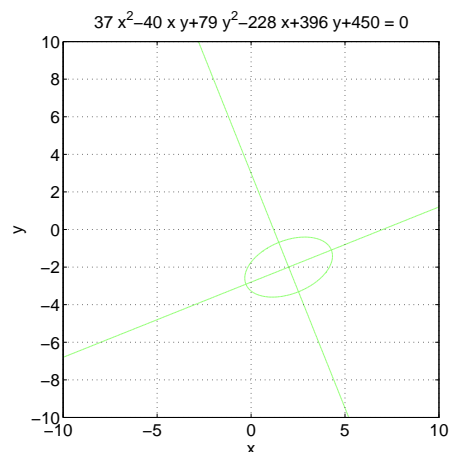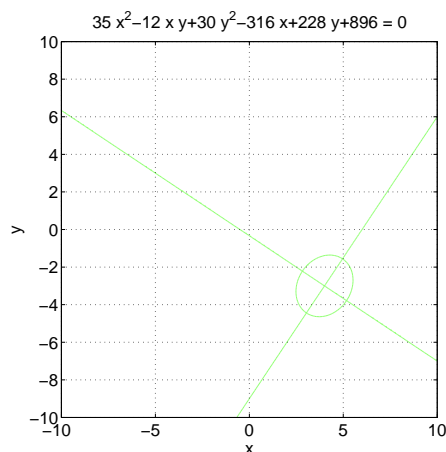$$18\,x^2 - 8\,x\,y + 12\,y^2 + 120\,x + 40\,y + 285 = 0$$

$$\mathsf{A} = \begin{pmatrix} 18 & -4 \\ -4 & 12 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} -60 \\ -20 \end{pmatrix} \quad c = 285$$

$$\mathsf{D} = \begin{pmatrix} 10 & 0 \\ 0 & 20 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/5 \cdot \sqrt{5} & -2/5 \cdot \sqrt{5} \\ 2/5 \cdot \sqrt{5} & 1/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} -4 \\ -3 \end{pmatrix} \quad \mathsf{f}(\overline{s}) = -15$$

$$\left(\frac{x'}{\sqrt{3/2}}\right)^2 + \left(\frac{y'}{\sqrt{3/4}}\right)^2 = 1$$

35 x²−12 x y+30 y²−316 x+228 y+896 = 0

37 x²−40 x y+79 y²−228 x+396 y+450 = 0

29. Vyšetřete kuželosečku o rovnici:

$$35\,x^2 - 12\,x\,y + 30\,y^2 - 316\,x + 228\,y + 896 = 0$$

$$\mathsf{A} = \begin{pmatrix} 35 & -6 \\ -6 & 30 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 158 \\ -114 \end{pmatrix} \quad c = 896$$

$$\mathsf{D} = \begin{pmatrix} 39 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 3/13 \cdot \sqrt{13} & 2/13 \cdot \sqrt{13} \\ -2/13 \cdot \sqrt{13} & 3/13 \cdot \sqrt{13} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 4 \\ -3 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -78$$

$$\left(\frac{x'}{\sqrt{2}} \right)^2 + \left(\frac{y'}{\sqrt{3}} \right)^2 = 1$$

30. Vyšetřete kuželosečku o rovnici:

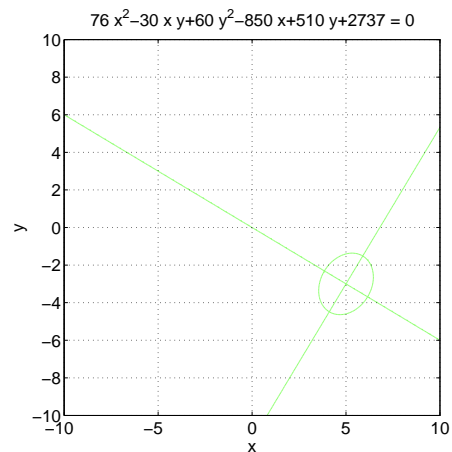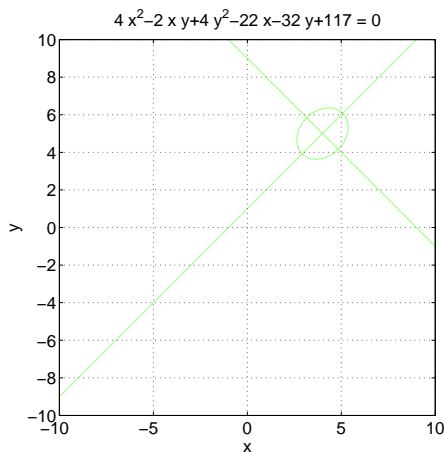$$37\,x^2 - 40\,x\,y + 79\,y^2 - 228\,x + 396\,y + 450 = 0$$

$$\mathsf{A} = \begin{pmatrix} 37 & -20 \\ -20 & 79 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 114 \\ -198 \end{pmatrix} \quad c = 450$$

$$\mathsf{D} = \begin{pmatrix} 87 & 0 \\ 0 & 29 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} \frac{2}{29} \cdot \sqrt{29} & \frac{5}{29} \cdot \sqrt{29} \\ -\frac{5}{29} \cdot \sqrt{29} & \frac{2}{29} \cdot \sqrt{29} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 2 \\ -2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -174$$

$$\left(\frac{x'}{\sqrt{2}} \right)^2 + \left(\frac{y'}{\sqrt{6}} \right)^2 = 1$$

$4\,x^2-2\,x\,y+4\,y^2-22\,x-32\,y+117=0$

$76\,x^2-30\,x\,y+60\,y^2-850\,x+510\,y+2737=0$

31. Vyšetřete kuželosečku o rovnici:

$$4\,x^2 - 2\,x\,y + 4\,y^2 - 22\,x - 32\,y + 117 = 0$$

$$\mathsf{A} = \begin{pmatrix} 4 & -1 \\ -1 & 4 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 11 \\ 16 \end{pmatrix} \quad c = 117$$

$$\mathsf{D} = \begin{pmatrix} 3 & 0 \\ 0 & 5 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 4 \\ 5 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -7$$

$$\left(\frac{x'}{\sqrt{7/3}}\right)^2 + \left(\frac{y'}{\sqrt{7/5}}\right)^2 = 1$$
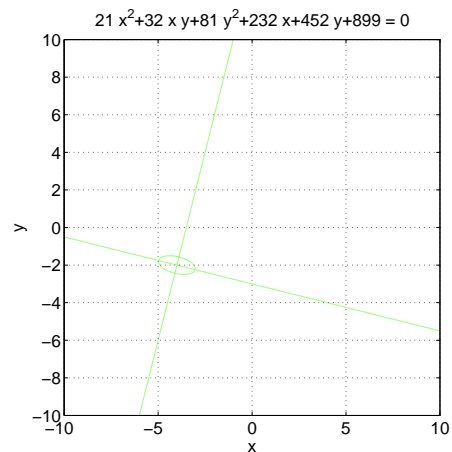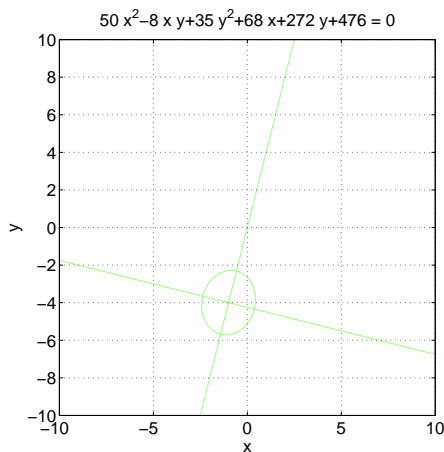
32. Vyšetřete kuželosečku o rovnici:

$$76\,x^2 - 30\,x\,y + 60\,y^2 - 850\,x + 510\,y + 2737 = 0$$

$$\mathsf{A} = \begin{pmatrix} 76 & -15 \\ -15 & 60 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 425 \\ -255 \end{pmatrix} \quad c = 2737$$

$$\mathsf{D} = \begin{pmatrix} 85 & 0 \\ 0 & 51 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{34} \cdot \sqrt{34} & -\frac{3}{34} \cdot \sqrt{34} \\ \frac{3}{34} \cdot \sqrt{34} & -\frac{5}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 5 \\ -3 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -153$$

$$\left(\frac{x'}{\sqrt{9/5}}\right)^2 + \left(\frac{y'}{\sqrt{3}}\right)^2 = 1$$

Figure: $50\,x^2 - 8\,x\,y + 35\,y^2 + 68\,x + 272\,y + 476 = 0$

Figure: $21\,x^2 + 32\,x\,y + 81\,y^2 + 232\,x + 452\,y + 899 = 0$

33. Vyšetřete kuželosečku o rovnici:

$$50\,x^2 - 8\,x\,y + 35\,y^2 + 68\,x + 272\,y + 476 = 0$$

$$\mathsf{A} = \begin{pmatrix} 50 & -4 \\ -4 & 35 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} -34 \\ -136 \end{pmatrix} \quad c = 476$$

$$\mathsf{D} = \begin{pmatrix} 34 & 0 \\ 0 & 51 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/17 \cdot \sqrt{17} & \frac{4}{17} \cdot \sqrt{17} \\ -\frac{4}{17} \cdot \sqrt{17} & -1/17 \cdot \sqrt{17} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} -1 \\ -4 \end{pmatrix} \quad \mathsf{f}(\overline{s}) = -102$$

$$\left(\frac{x'}{\sqrt{3}}\right)^2 + \left(\frac{y'}{\sqrt{2}}\right)^2 = 1$$

34. Vyšetřete kuželosečku o rovnici:

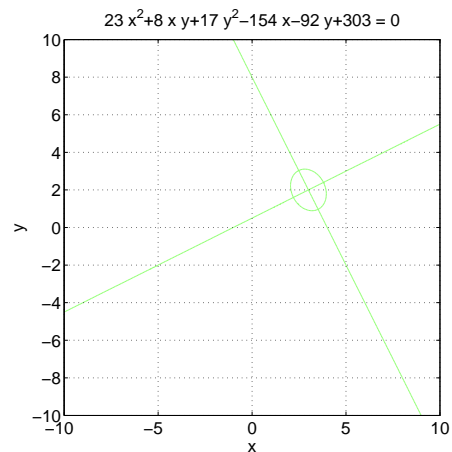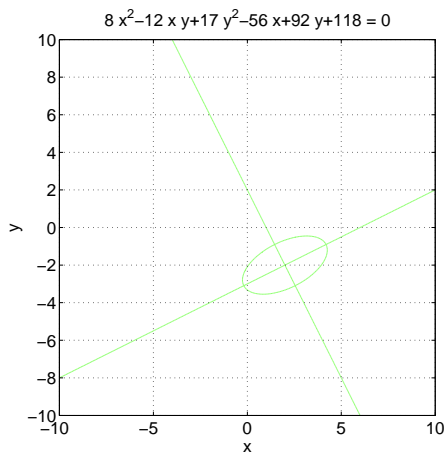$$21\,x^2 + 32\,x\,y + 81\,y^2 + 232\,x + 452\,y + 899 = 0$$

$$\mathsf{A} = \begin{pmatrix} 21 & 16 \\ 16 & 81 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} -116 \\ -226 \end{pmatrix} \quad c = 899$$

$$\mathsf{D} = \begin{pmatrix} 85 & 0 \\ 0 & 17 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/17 \cdot \sqrt{17} & -\frac{4}{17} \cdot \sqrt{17} \\ \frac{4}{17} \cdot \sqrt{17} & 1/17 \cdot \sqrt{17} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} -4 \\ -2 \end{pmatrix} \quad \mathsf{f}(\overline{s}) = -17$$

$$\left(\frac{x'}{\sqrt{1/5}}\right)^2 + \left(\frac{y'}{\sqrt{1}}\right)^2 = 1$$

8 x²–12 x y+17 y²–56 x+92 y+118 = 0

23 x²+8 x y+17 y²–154 x–92 y+303 = 0

35. Vyšetřete kuželosečku o rovnici:

$$8\,x^2 - 12\,x\,y + 17\,y^2 - 56\,x + 92\,y + 118 = 0$$

$$\mathsf{A} = \begin{pmatrix} 8 & -6 \\ -6 & 17 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 28 \\ -46 \end{pmatrix} \quad c = 118$$

$$\mathsf{D} = \begin{pmatrix} 5 & 0 \\ 0 & 20 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -2/5 \cdot \sqrt{5} & 1/5 \cdot \sqrt{5} \\ -1/5 \cdot \sqrt{5} & -2/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 2 \\ -2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -30$$

$$\left(\frac{x'}{\sqrt{6}}\right)^2 + \left(\frac{y'}{\sqrt{3/2}}\right)^2 = 1$$
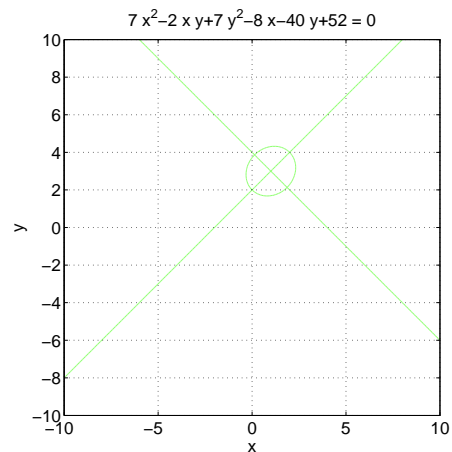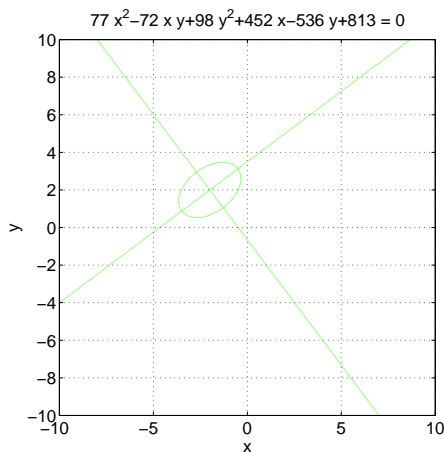
---

36. Vyšetřete kuželosečku o rovnici:

$$23\,x^2 + 8\,x\,y + 17\,y^2 - 154\,x - 92\,y + 303 = 0$$

$$\mathsf{A} = \begin{pmatrix} 23 & 4 \\ 4 & 17 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 77 \\ 46 \end{pmatrix} \quad c = 303$$

$$\mathsf{D} = \begin{pmatrix} 25 & 0 \\ 0 & 15 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 2/5 \cdot \sqrt{5} & -1/5 \cdot \sqrt{5} \\ 1/5 \cdot \sqrt{5} & 2/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 3 \\ 2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -20$$

$$\left(\frac{x'}{\sqrt{4/5}}\right)^2 + \left(\frac{y'}{\sqrt{4/3}}\right)^2 = 1$$

77 x²−72 x y+98 y²+452 x−536 y+813 = 0

7 x²−2 x y+7 y²−8 x−40 y+52 = 0

37. Vyšetřete kuželosečku o rovnici:

$$77\,x^2 - 72\,x\,y + 98\,y^2 + 452\,x - 536\,y + 813 = 0$$

$$\mathsf{A} = \begin{pmatrix} 77 & -36 \\ -36 & 98 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} -226 \\ 268 \end{pmatrix} \quad c = 813$$

$$\mathsf{D} = \begin{pmatrix} 125 & 0 \\ 0 & 50 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -3/5 & -4/5 \\ 4/5 & -3/5 \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} -2 \\ 2 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -175$$

$$\left(\frac{x'}{\sqrt{7/5}}\right)^2 + \left(\frac{y'}{\sqrt{7/2}}\right)^2 = 1$$
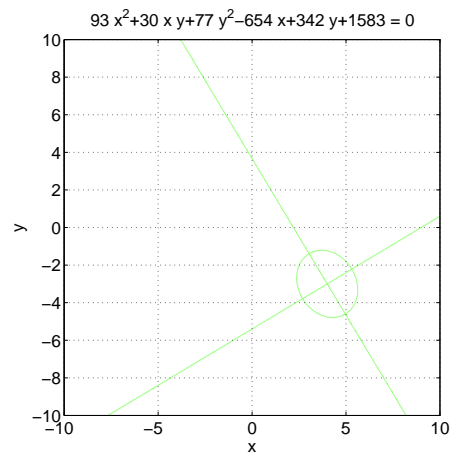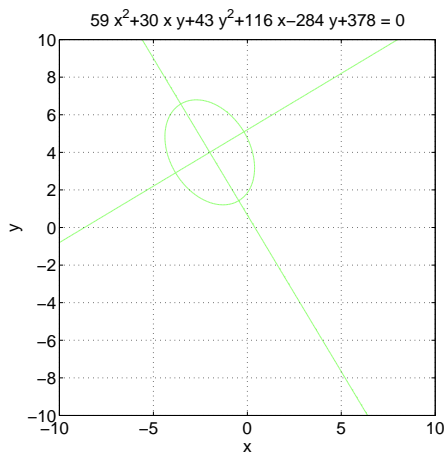
---

38. Vyšetřete kuželosečku o rovnici:

$$7\,x^2 - 2\,x\,y + 7\,y^2 - 8\,x - 40\,y + 52 = 0$$

$$\mathsf{A} = \begin{pmatrix} 7 & -1 \\ -1 & 7 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 4 \\ 20 \end{pmatrix} \quad c = 52$$

$$\mathsf{D} = \begin{pmatrix} 6 & 0 \\ 0 & 8 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \\ -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\bar{s} = \begin{pmatrix} 1 \\ 3 \end{pmatrix} \quad \mathrm{f}(\bar{s}) = -12$$

$$\left(\frac{x'}{\sqrt{2}}\right)^2 + \left(\frac{y'}{\sqrt{3/2}}\right)^2 = 1$$

$59\,x^2+30\,x\,y+43\,y^2+116\,x-284\,y+378 = 0$

$93\,x^2+30\,x\,y+77\,y^2-654\,x+342\,y+1583 = 0$

39. Vyšetřete kuželosečku o rovnici:

$$59\,x^2 + 30\,x\,y + 43\,y^2 + 116\,x - 284\,y + 378 = 0$$

$$\mathsf{A} = \begin{pmatrix} 59 & 15 \\ 15 & 43 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} -58 \\ 142 \end{pmatrix} \quad c = 378$$

$$\mathsf{D} = \begin{pmatrix} 68 & 0 \\ 0 & 34 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} \frac{5}{34}\cdot\sqrt{34} & -\frac{3}{34}\cdot\sqrt{34} \\ \frac{3}{34}\cdot\sqrt{34} & \frac{5}{34}\cdot\sqrt{34} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} -2 \\ 4 \end{pmatrix} \quad \mathrm{f}(\overline{s}) = -306$$

$$\left(\frac{x'}{\sqrt{9/2}}\right)^2 + \left(\frac{y'}{\sqrt{9}}\right)^2 = 1$$

40. Vyšetřete kuželosečku o rovnici:

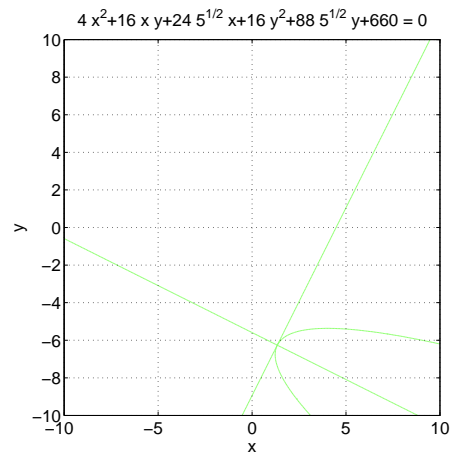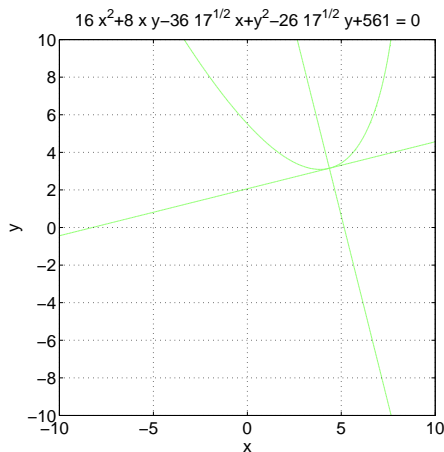$$93\,x^2 + 30\,x\,y + 77\,y^2 - 654\,x + 342\,y + 1583 = 0$$

$$\mathsf{A} = \begin{pmatrix} 93 & 15 \\ 15 & 77 \end{pmatrix} \quad \overline{b} = \begin{pmatrix} 327 \\ -171 \end{pmatrix} \quad c = 1583$$

$$\mathsf{D} = \begin{pmatrix} 102 & 0 \\ 0 & 68 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{34}\cdot\sqrt{34} & \frac{3}{34}\cdot\sqrt{34} \\ -\frac{3}{34}\cdot\sqrt{34} & -\frac{5}{34}\cdot\sqrt{34} \end{pmatrix}$$

$$\overline{s} = \begin{pmatrix} 4 \\ -3 \end{pmatrix} \quad \mathrm{f}(\overline{s}) = -238$$

$$\left(\frac{x'}{\sqrt{7/3}}\right)^2 + \left(\frac{y'}{\sqrt{7/2}}\right)^2 = 1$$

41. Vyšetřete kuželosečku o rovnici:

$$16\,x^2 + 8\,x\,y + y^2 - 36\,\sqrt{17}x - 26\,\sqrt{17}y + 561 = 0$$

$$\mathsf{A} = \begin{pmatrix} 16 & 4 \\ 4 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 17 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{4}{17} \cdot \sqrt{17} & 1/17 \cdot \sqrt{17} \\ -1/17 \cdot \sqrt{17} & -\frac{4}{17} \cdot \sqrt{17} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{18}{17} \cdot \sqrt{17} & \frac{13}{17} \cdot \sqrt{17} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} -5 & -2 \end{pmatrix}$$

$$(x' + 5)^2 = -4\,(y' + 2)$$

42. Vyšetřete kuželosečku o rovnici:

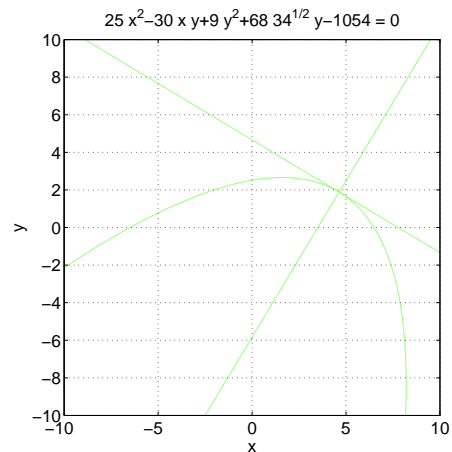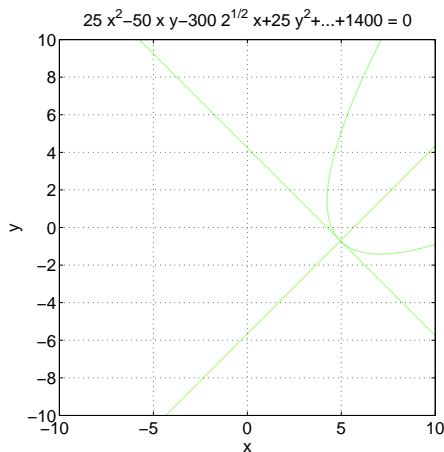$$4\,x^2 + 16\,x\,y + 16\,y^2 + 24\,\sqrt{5}x + 88\,\sqrt{5}y + 660 = 0$$

$$\mathsf{A} = \begin{pmatrix} 4 & 8 \\ 8 & 16 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 20 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/5 \cdot \sqrt{5} & -2/5 \cdot \sqrt{5} \\ 2/5 \cdot \sqrt{5} & 1/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 3/5 \cdot \sqrt{5} & -\frac{14}{5} \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} -5 & -4 \end{pmatrix}$$

$$(x' + 5)^2 = -2\,(y' + 4)$$

25 x²–50 x y–300 2^{1/2} x+25 y²+...+1400 = 0

25 x²–30 x y+9 y²+68 34^{1/2} y–1054 = 0

43. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 50\,x\,y + 25\,y^2 - 300\,\sqrt{2}x + 100\,\sqrt{2}y + 1400 = 0$$

$$A = \begin{pmatrix} 25 & -25 \\ -25 & 25 \end{pmatrix}$$

$$D = \begin{pmatrix} 0 & 0 \\ 0 & 50 \end{pmatrix} \quad X = \begin{pmatrix} -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$V = \begin{pmatrix} 7/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$V' = \begin{pmatrix} -4 & -3 \end{pmatrix}$$

$$(x' + 4)^2 = -4\,(y' + 3)$$

---

44. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 30\,x\,y + 9\,y^2 + 68\,\sqrt{34}y - 1054 = 0$$
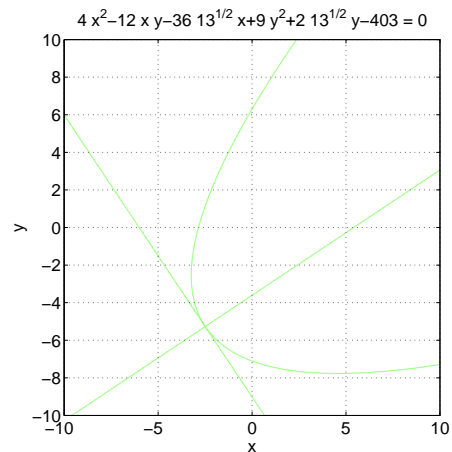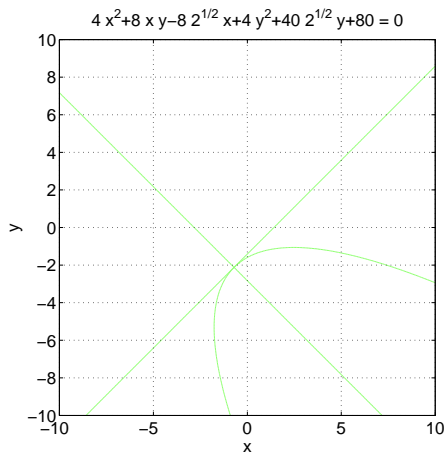
$$A = \begin{pmatrix} 25 & -15 \\ -15 & 9 \end{pmatrix}$$

$$D = \begin{pmatrix} 0 & 0 \\ 0 & 34 \end{pmatrix} \quad X = \begin{pmatrix} \frac{5}{34} \cdot \sqrt{34} & \frac{3}{34} \cdot \sqrt{34} \\ -\frac{3}{34} \cdot \sqrt{34} & \frac{5}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$V = \begin{pmatrix} \frac{27}{34} \cdot \sqrt{34} & \frac{11}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$V' = \begin{pmatrix} 3 & 4 \end{pmatrix}$$

$$(x' - 3)^2 = -10\,(y' - 4)$$

45. Vyšetřete kuželosečku o rovnici:

$$4\,x^2 + 8\,x\,y + 4\,y^2 - 8\,\sqrt{2}x + 40\,\sqrt{2}y + 80 = 0$$

$$\mathsf{A} = \begin{pmatrix} 4 & 4 \\ 4 & 4 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 8 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -1/2 \cdot \sqrt{2} & -3/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -1 & 2 \end{pmatrix}$$

$$(y' + 1)^2 = -6\,(x' - 2)$$

---

46. Vyšetřete kuželosečku o rovnici:

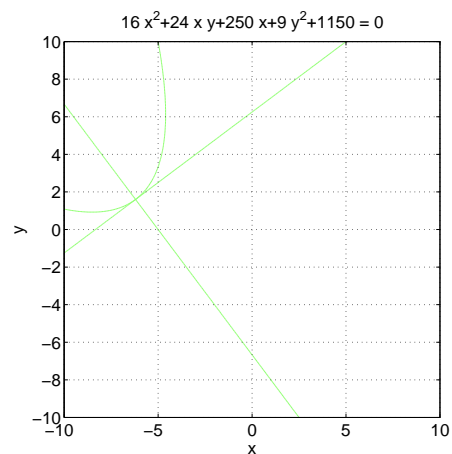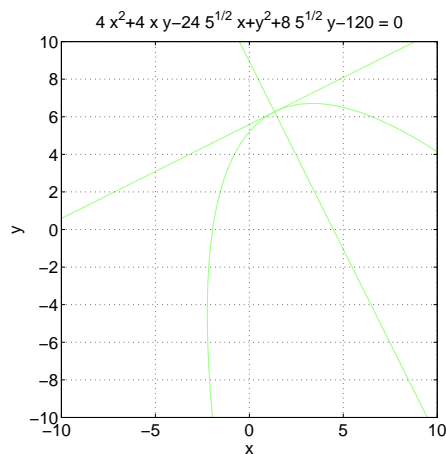$$4\,x^2 - 12\,x\,y + 9\,y^2 - 36\,\sqrt{13}x + 2\,\sqrt{13}y - 403 = 0$$

$$\mathsf{A} = \begin{pmatrix} 4 & -6 \\ -6 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 13 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -2/13 \cdot \sqrt{13} & -3/13 \cdot \sqrt{13} \\ 3/13 \cdot \sqrt{13} & -2/13 \cdot \sqrt{13} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{9}{13} \cdot \sqrt{13} & -\frac{19}{13} \cdot \sqrt{13} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -3 & 5 \end{pmatrix}$$

$$(x' + 3)^2 = -8\,(y' - 5)$$

$4\ x^2 + 4\ x\ y - 24\ 5^{1/2}\ x + y^2 + 8\ 5^{1/2}\ y - 120 = 0$

$16\ x^2 + 24\ x\ y + 250\ x + 9\ y^2 + 1150 = 0$

47. Vyšetřete kuželosečku o rovnici:

$$4\,x^2 + 4\,x\,y + y^2 - 24\,\sqrt{5}x + 8\,\sqrt{5}y - 120 = 0$$

$$\mathsf{A} = \begin{pmatrix} 4 & 2 \\ 2 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 5 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 2/5 \cdot \sqrt{5} & -1/5 \cdot \sqrt{5} \\ 1/5 \cdot \sqrt{5} & 2/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 3/5 \cdot \sqrt{5} & \frac{14}{5} \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 4 & 5 \end{pmatrix}$$

$$(x' - 4)^2 = -8\,(y' - 5)$$

---

48. Vyšetřete kuželosečku o rovnici:
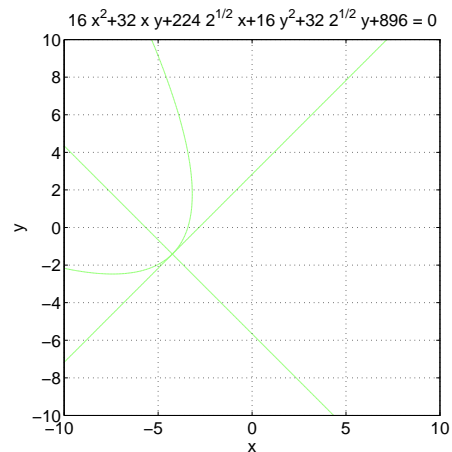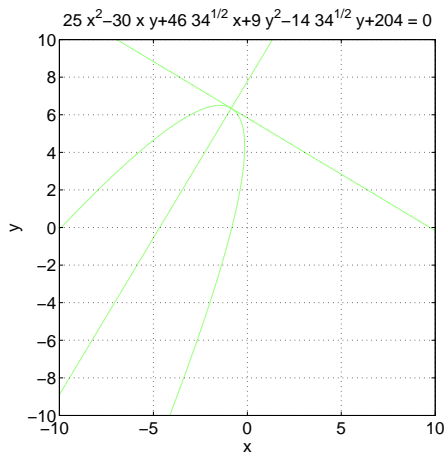
$$16\,x^2 + 24\,x\,y + 9\,y^2 + 250\,x + 1150 = 0$$

$$\mathsf{A} = \begin{pmatrix} 16 & 12 \\ 12 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 25 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 4/5 & -3/5 \\ 3/5 & 4/5 \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{31}{5} & 8/5 \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -4 & 5 \end{pmatrix}$$

$$(x' + 4)^2 = 6\,(y' - 5)$$

25 x²−30 x y+46 34^(1/2) x+9 y²−14 34^(1/2) y+204 = 0

16 x²+32 x y+224 2^(1/2) x+16 y²+32 2^(1/2) y+896 = 0

49. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 30\,x\,y + 9\,y^2 + 46\,\sqrt{34}x - 14\,\sqrt{34}y + 204 = 0$$

$$\mathsf{A} = \begin{pmatrix} 25 & -15 \\ -15 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 34 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} \frac{5}{34} \cdot \sqrt{34} & \frac{3}{34} \cdot \sqrt{34} \\ -\frac{3}{34} \cdot \sqrt{34} & \frac{5}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{5}{34} \cdot \sqrt{34} & \frac{37}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -4 & 5 \end{pmatrix}$$

$$(x' + 4)^2 = -2\,(y' - 5)$$

---

50. Vyšetřete kuželosečku o rovnici:

$$16\,x^2 + 32\,x\,y + 16\,y^2 + 224\,\sqrt{2}x + 32\,\sqrt{2}y + 896 = 0$$
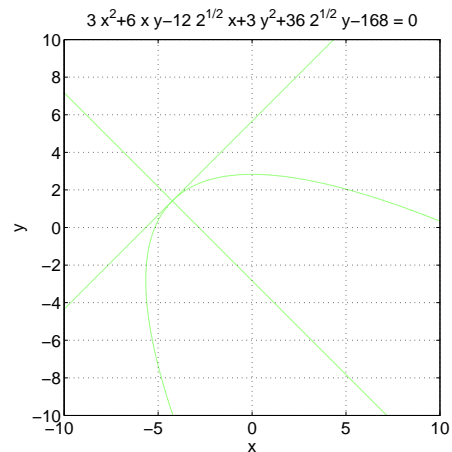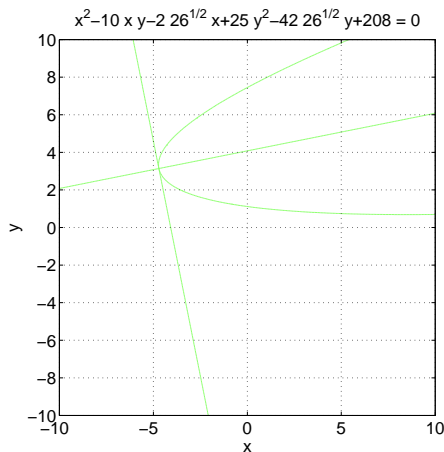
$$\mathsf{A} = \begin{pmatrix} 16 & 16 \\ 16 & 16 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 32 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -3 \cdot \sqrt{2} & -\sqrt{2} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -4 & 2 \end{pmatrix}$$

$$(x' + 4)^2 = 6 \cdot (y' - 2)$$

51. Vyšetřete kuželosečku o rovnici:

$$x^2 - 10\,x\,y + 25\,y^2 - 2\,\sqrt{26}x - 42\,\sqrt{26}y + 208 = 0$$

$$\mathsf{A} = \begin{pmatrix} 1 & -5 \\ -5 & 25 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/26 \cdot \sqrt{26} & \frac{5}{26} \cdot \sqrt{26} \\ -\frac{5}{26} \cdot \sqrt{26} & 1/26 \cdot \sqrt{26} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{12}{13} \cdot \sqrt{26} & \frac{8}{13} \cdot \sqrt{26} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} -4 & -4 \end{pmatrix}$$

$$(x' + 4)^2 = 2\,(y' + 4)$$

---

52. Vyšetřete kuželosečku o rovnici:

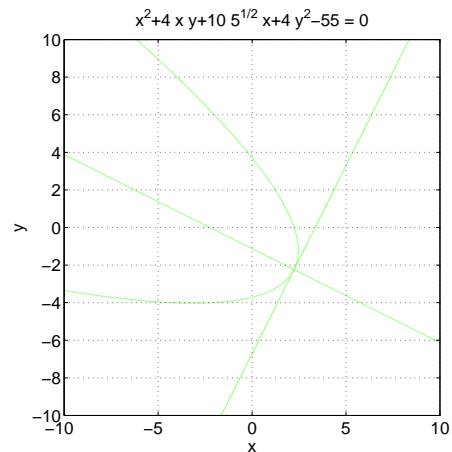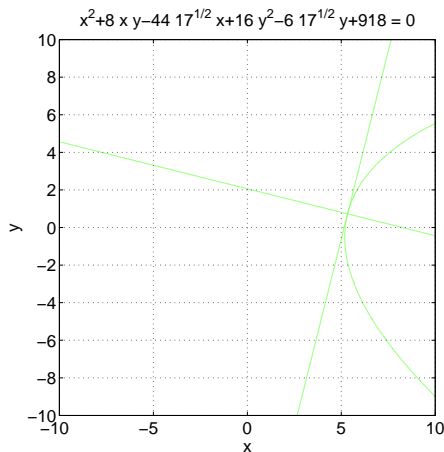$$3\,x^2 + 6\,x\,y + 3\,y^2 - 12\,\sqrt{2}x + 36\,\sqrt{2}y - 168 = 0$$

$$\mathsf{A} = \begin{pmatrix} 3 & 3 \\ 3 & 3 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 6 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -3 \cdot \sqrt{2} & \sqrt{2} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} 4 & 2 \end{pmatrix}$$

$$(y' - 4)^2 = -8\,(x' - 2)$$

$x^2+8 x y-44\ 17^{1/2} x+16\ y^2-6\ 17^{1/2} y+918 = 0$

$x^2+4 x y+10\ 5^{1/2} x+4\ y^2-55 = 0$

53. Vyšetřete kuželosečku o rovnici:

$$x^2 + 8\,x\,y + 16\,y^2 - 44\,\sqrt{17}x - 6\,\sqrt{17}y + 918 = 0$$

$$\mathsf{A} = \begin{pmatrix} 1 & 4 \\ 4 & 16 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 17 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/17 \cdot \sqrt{17} & -\frac{4}{17} \cdot \sqrt{17} \\ \frac{4}{17} \cdot \sqrt{17} & 1/17 \cdot \sqrt{17} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{22}{17} \cdot \sqrt{17} & \frac{3}{17} \cdot \sqrt{17} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 2 & -5 \end{pmatrix}$$

$$(x' - 2)^2 = -10\,(y' + 5)$$

---

54. Vyšetřete kuželosečku o rovnici:

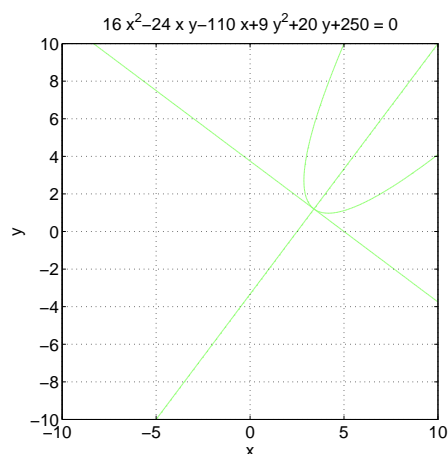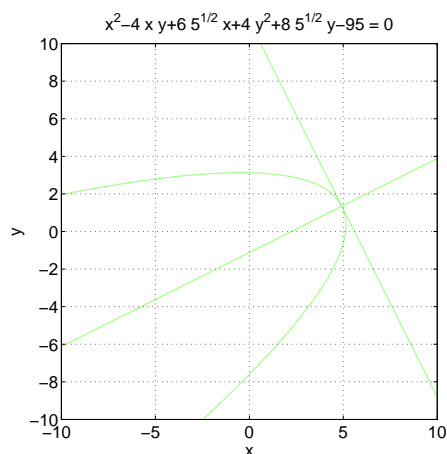$$x^2 + 4\,x\,y + 4\,y^2 + 10\,\sqrt{5}x - 55 = 0$$

$$\mathsf{A} = \begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 5 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -2/5 \cdot \sqrt{5} & -1/5 \cdot \sqrt{5} \\ 1/5 \cdot \sqrt{5} & -2/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \sqrt{5} & -\sqrt{5} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -3 & 1 \end{pmatrix}$$

$$(y' + 3)^2 = 4\,(x' - 1)$$

$x^2-4\,x\,y+6\,5^{1/2}\,x+4\,y^2+8\,5^{1/2}\,y-95 = 0$

$16\,x^2-24\,x\,y-110\,x+9\,y^2+20\,y+250 = 0$

55. Vyšetřete kuželosečku o rovnici:

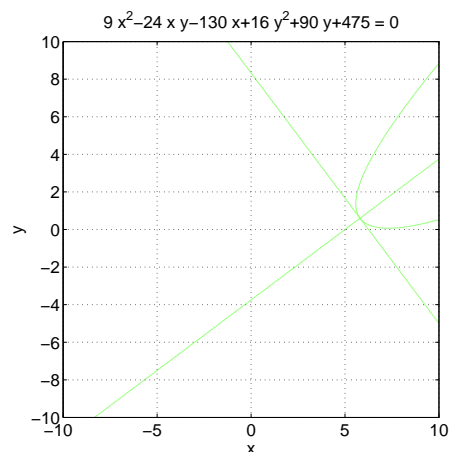$$x^2 - 4\,x\,y + 4\,y^2 + 6\,\sqrt{5}x + 8\,\sqrt{5}y - 95 = 0$$

$$\mathsf{A} = \begin{pmatrix} 1 & -2 \\ -2 & 4 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 5 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/5 \cdot \sqrt{5} & 2/5 \cdot \sqrt{5} \\ -2/5 \cdot \sqrt{5} & 1/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{11}{5} \cdot \sqrt{5} & 3/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 1 & 5 \end{pmatrix}$$

$$(x' - 1)^2 = -4\,(y' - 5)$$

---

56. Vyšetřete kuželosečku o rovnici:

$$16\,x^2 - 24\,x\,y + 9\,y^2 - 110\,x + 20\,y + 250 = 0$$
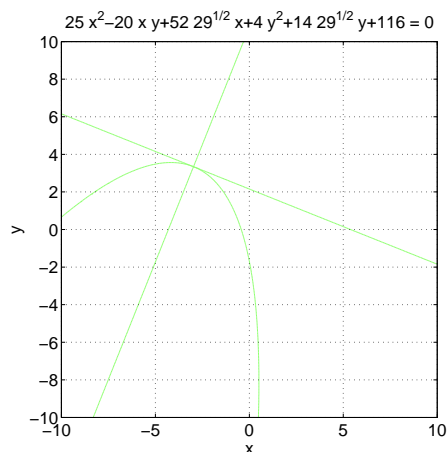
$$\mathsf{A} = \begin{pmatrix} 16 & -12 \\ -12 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 25 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -3/5 & 4/5 \\ -4/5 & -3/5 \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{17}{5} & 6/5 \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -3 & 2 \end{pmatrix}$$

$$(y' + 3)^2 = -2\,(x' - 2)$$

$25\,x^2{-}20\,x\,y{+}52\,29^{1/2}\,x{+}4\,y^2{+}14\,29^{1/2}\,y{+}116 = 0$

$9\,x^2{-}24\,x\,y{-}130\,x{+}16\,y^2{+}90\,y{+}475 = 0$

57. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 20\,x\,y + 4\,y^2 + 52\,\sqrt{29}x + 14\,\sqrt{29}y + 116 = 0$$

$$\mathsf{A} = \begin{pmatrix} 25 & -10 \\ -10 & 4 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 29 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{29}\cdot\sqrt{29} & -\frac{2}{29}\cdot\sqrt{29} \\ \frac{2}{29}\cdot\sqrt{29} & -\frac{5}{29}\cdot\sqrt{29} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{16}{29}\cdot\sqrt{29} & \frac{18}{29}\cdot\sqrt{29} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 4 & -2 \end{pmatrix}$$

$$(x' - 4)^2 = 6\,(y' + 2)$$

---

58. Vyšetřete kuželosečku o rovnici:
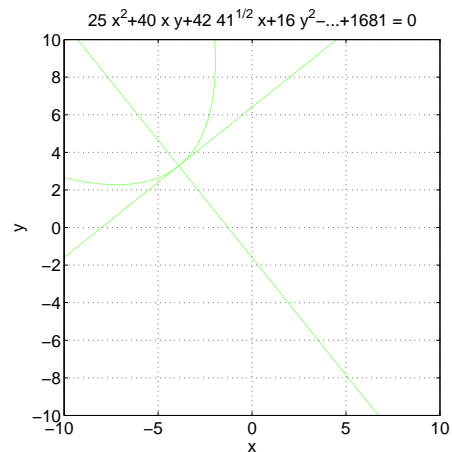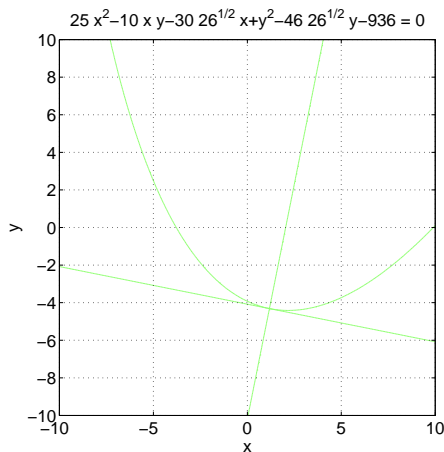
$$9\,x^2 - 24\,x\,y + 16\,y^2 - 130\,x + 90\,y + 475 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -12 \\ -12 & 16 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 25 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -3/5 & -4/5 \\ 4/5 & -3/5 \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{29}{5} & 3/5 \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -3 & -5 \end{pmatrix}$$

$$(x' + 3)^2 = -2\,(y' + 5)$$

59. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 10\,x\,y + y^2 - 30\,\sqrt{26}x - 46\,\sqrt{26}y - 936 = 0$$

$$\mathsf{A} = \begin{pmatrix} 25 & -5 \\ -5 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 26 \end{pmatrix} \qquad \mathsf{X} = \begin{pmatrix} -1/26 \cdot \sqrt{26} & \frac{5}{26} \cdot \sqrt{26} \\ -\frac{5}{26} \cdot \sqrt{26} & -1/26 \cdot \sqrt{26} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 3/13 \cdot \sqrt{26} & -\frac{11}{13} \cdot \sqrt{26} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} 4 & 2 \end{pmatrix}$$

$$(y' - 4)^2 = -10\,(x' - 2)$$

---

60. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 + 40\,x\,y + 16\,y^2 + 42\,\sqrt{41}x - 32\,\sqrt{41}y + 1681 = 0$$
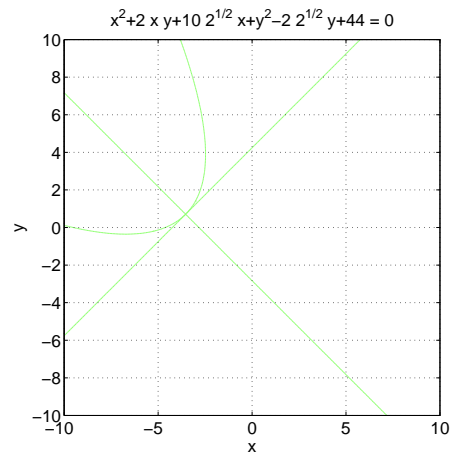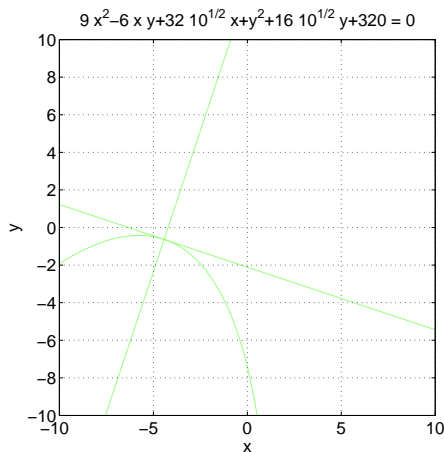
$$\mathsf{A} = \begin{pmatrix} 25 & 20 \\ 20 & 16 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 41 \end{pmatrix} \qquad \mathsf{X} = \begin{pmatrix} -\frac{5}{41} \cdot \sqrt{41} & \frac{4}{41} \cdot \sqrt{41} \\ -\frac{4}{41} \cdot \sqrt{41} & -\frac{5}{41} \cdot \sqrt{41} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{25}{41} \cdot \sqrt{41} & \frac{21}{41} \cdot \sqrt{41} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} 1 & -5 \end{pmatrix}$$

$$(x' - 1)^2 = -8\,(y' + 5)$$

9 x²–6 x y+32 10^(1/2) x+y²+16 10^(1/2) y+320 = 0

x²+2 x y+10 2^(1/2) x+y²–2 2^(1/2) y+44 = 0

61. Vyšetřete kuželosečku o rovnici:

$$9\,x^2 - 6\,x\,y + y^2 + 32\,\sqrt{10}x + 16\,\sqrt{10}y + 320 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -3 \\ -3 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 10 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/10 \cdot \sqrt{10} & -3/10 \cdot \sqrt{10} \\ 3/10 \cdot \sqrt{10} & 1/10 \cdot \sqrt{10} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -7/5 \cdot \sqrt{10} & -1/5 \cdot \sqrt{10} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -2 & 4 \end{pmatrix}$$

$$(y' + 2)^2 = -8\,(x' - 4)$$

62. Vyšetřete kuželosečku o rovnici:

$$x^2 + 2\,x\,y + y^2 + 10\,\sqrt{2}x - 2\,\sqrt{2}y + 44 = 0$$
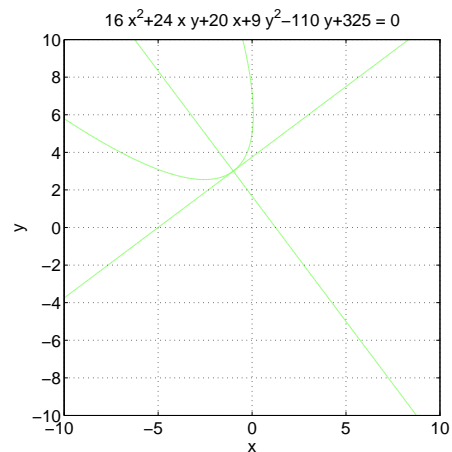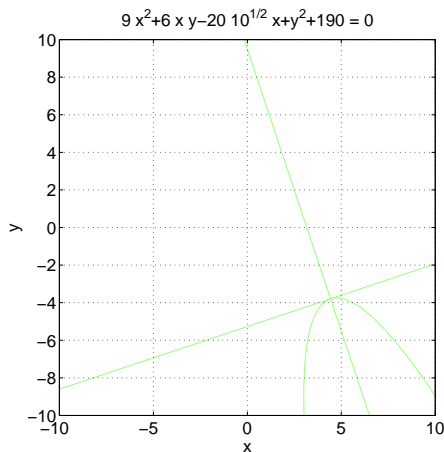
$$\mathsf{A} = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 2 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -5/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -2 & 3 \end{pmatrix}$$

$$(x' + 2)^2 = 6\,(y' - 3)$$

9 x²+6 x y−20 10^{1/2} x+y²+190 = 0

16 x²+24 x y+20 x+9 y²−110 y+325 = 0

63. Vyšetřete kuželosečku o rovnici:

$$9\,x^2 + 6\,x\,y + y^2 - 20\,\sqrt{10}\,x + 190 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & 3 \\ 3 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 10 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -3/10\cdot\sqrt{10} & 1/10\cdot\sqrt{10} \\ -1/10\cdot\sqrt{10} & -3/10\cdot\sqrt{10} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 7/5\cdot\sqrt{10} & -6/5\cdot\sqrt{10} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -3 & 5 \end{pmatrix}$$

$$(x' + 3)^2 = 2\,(y' - 5)$$

---

64. Vyšetřete kuželosečku o rovnici:

$$16\,x^2 + 24\,x\,y + 9\,y^2 + 20\,x - 110\,y + 325 = 0$$
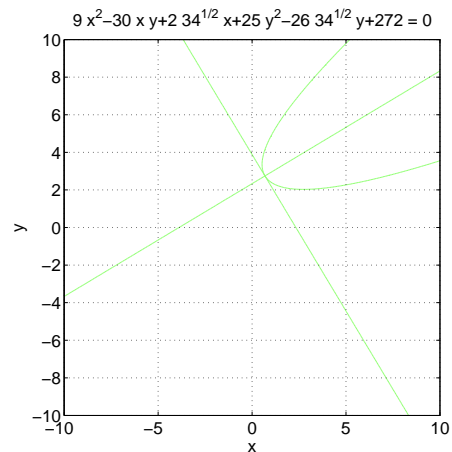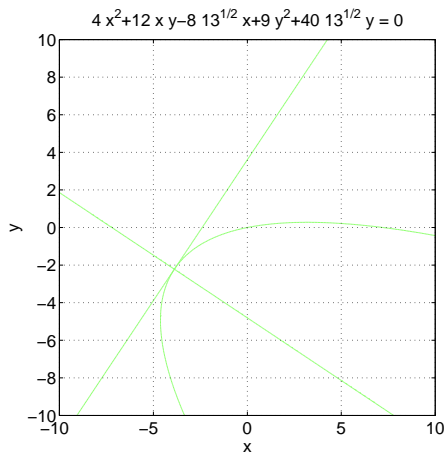
$$\mathsf{A} = \begin{pmatrix} 16 & 12 \\ 12 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 25 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 4/5 & -3/5 \\ 3/5 & 4/5 \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -1 & 3 \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 1 & 3 \end{pmatrix}$$

$$(x' - 1)^2 = 4\,(y' - 3)$$

4 x²+12 x y−8 13^(1/2) x+9 y²+40 13^(1/2) y = 0

9 x²−30 x y+2 34^(1/2) x+25 y²−26 34^(1/2) y+272 = 0

65. Vyšetřete kuželosečku o rovnici:

$$4\,x^2 + 12\,x\,y + 9\,y^2 - 8\cdot\sqrt{13}x + 40\cdot\sqrt{13}y = 0$$

$$\mathsf{A} = \begin{pmatrix} 4 & 6 \\ 6 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 13 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 3/13\cdot\sqrt{13} & 2/13\cdot\sqrt{13} \\ -2/13\cdot\sqrt{13} & 3/13\cdot\sqrt{13} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{14}{13}\cdot\sqrt{13} & -\frac{8}{13}\cdot\sqrt{13} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -2 & -4 \end{pmatrix}$$

$$(y' + 2)^2 = 8\,(x' + 4)$$

66. Vyšetřete kuželosečku o rovnici:

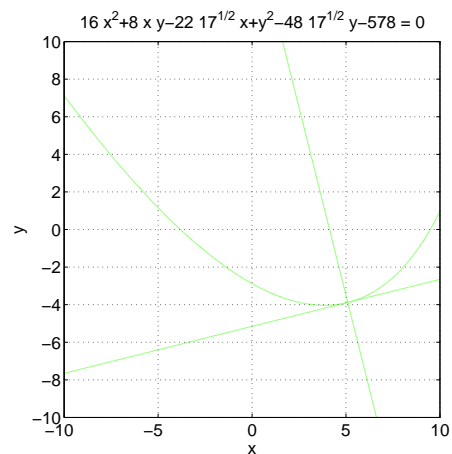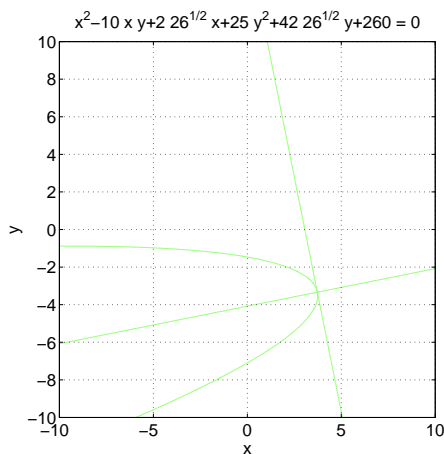$$9\,x^2 - 30\,x\,y + 25\,y^2 + 2\,\sqrt{34}x - 26\,\sqrt{34}y + 272 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -15 \\ -15 & 25 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 34 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{3}{34}\cdot\sqrt{34} & -\frac{5}{34}\cdot\sqrt{34} \\ \frac{5}{34}\cdot\sqrt{34} & -\frac{3}{34}\cdot\sqrt{34} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 2/17\cdot\sqrt{34} & \frac{8}{17}\cdot\sqrt{34} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 2 & -2 \end{pmatrix}$$

$$(x' - 2)^2 = -2\,(y' + 2)$$

67. Vyšetřete kuželosečku o rovnici:

$$x^2 - 10\,x\,y + 25\,y^2 + 2\,\sqrt{26}x + 42\,\sqrt{26}y + 260 = 0$$

$$\mathsf{A} = \begin{pmatrix} 1 & -5 \\ -5 & 25 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{26}\cdot\sqrt{26} & 1/26\cdot\sqrt{26} \\ -1/26\cdot\sqrt{26} & -\frac{5}{26}\cdot\sqrt{26} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{19}{26}\cdot\sqrt{26} & -\frac{17}{26}\cdot\sqrt{26} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -3 & 4 \end{pmatrix}$$

$$(y'+3)^2 = 2\,(x'-4)$$

---

68. Vyšetřete kuželosečku o rovnici:

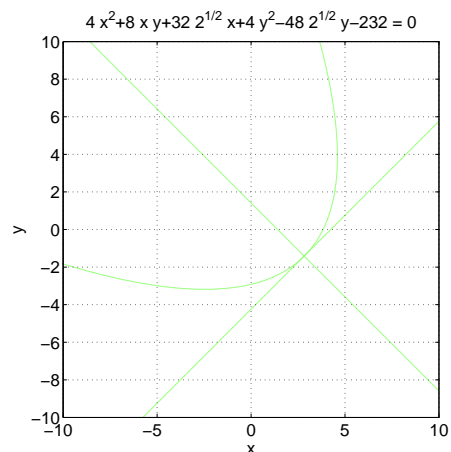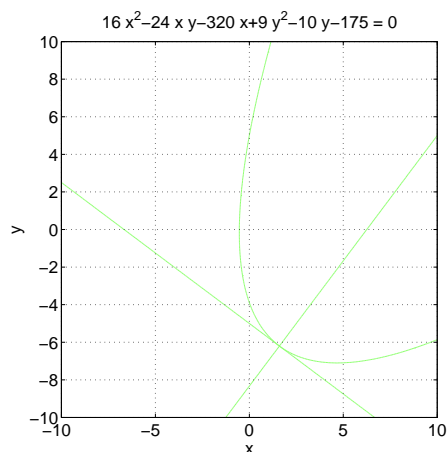$$16\,x^2 + 8\,x\,y + y^2 - 22\,\sqrt{17}x - 48\,\sqrt{17}y - 578 = 0$$

$$\mathsf{A} = \begin{pmatrix} 16 & 4 \\ 4 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 17 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/17\cdot\sqrt{17} & -\frac{4}{17}\cdot\sqrt{17} \\ \frac{4}{17}\cdot\sqrt{17} & -1/17\cdot\sqrt{17} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{21}{17}\cdot\sqrt{17} & -\frac{16}{17}\cdot\sqrt{17} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -5 & -4 \end{pmatrix}$$

$$(y'+5)^2 = 10\,(x'+4)$$

69. Vyšetřete kuželosečku o rovnici:

$$16\,x^2 - 24\,x\,y + 9\,y^2 - 320\,x - 10\,y - 175 = 0$$

$$\mathsf{A} = \begin{pmatrix} 16 & -12 \\ -12 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 25 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -3/5 & 4/5 \\ -4/5 & -3/5 \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 8/5 & -\frac{31}{5} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} 4 & 5 \end{pmatrix}$$

$$(y' - 4)^2 = -8\,(x' - 5)$$

---

70. Vyšetřete kuželosečku o rovnici:

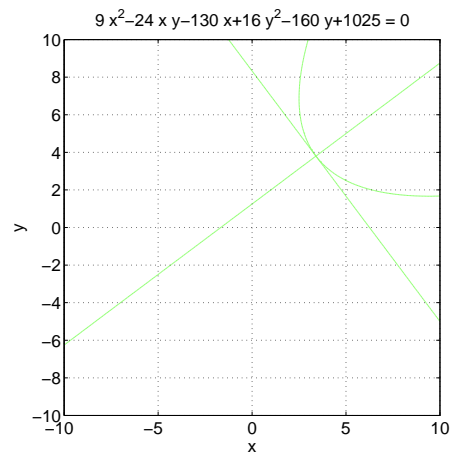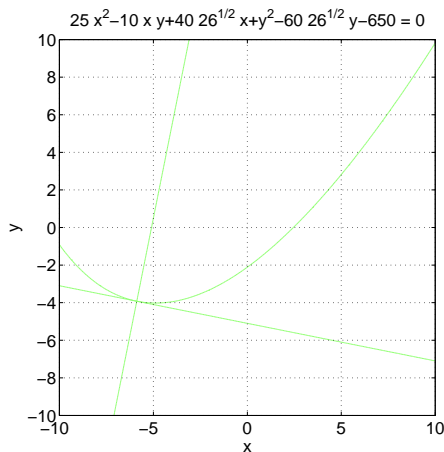$$4\,x^2 + 8\,x\,y + 4\,y^2 + 32\,\sqrt{2}x - 48\,\sqrt{2}y - 232 = 0$$

$$\mathsf{A} = \begin{pmatrix} 4 & 4 \\ 4 & 4 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 8 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & 1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 2 \cdot \sqrt{2} & -\sqrt{2} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} 1 & -3 \end{pmatrix}$$

$$(x' - 1)^2 = 10\,(y' + 3)$$

71. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 10\,x\,y + y^2 + 40\,\sqrt{26}x - 60\,\sqrt{26}y - 650 = 0$$

$$\mathsf{A} = \begin{pmatrix} 25 & -5 \\ -5 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{26}\cdot\sqrt{26} & -1/26\cdot\sqrt{26} \\ 1/26\cdot\sqrt{26} & -\frac{5}{26}\cdot\sqrt{26} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{15}{13}\cdot\sqrt{26} & -\frac{10}{13}\cdot\sqrt{26} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 5 & 5 \end{pmatrix}$$

$$(x' - 5)^2 = -10\,(y' - 5)$$

---

72. Vyšetřete kuželosečku o rovnici:
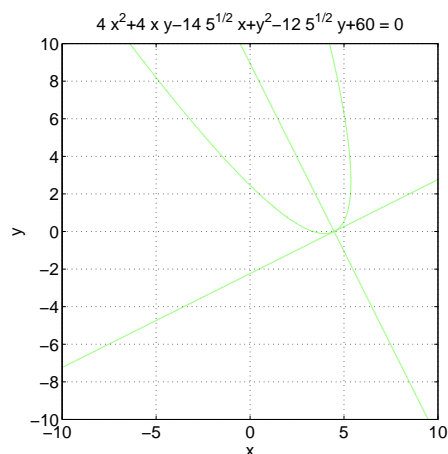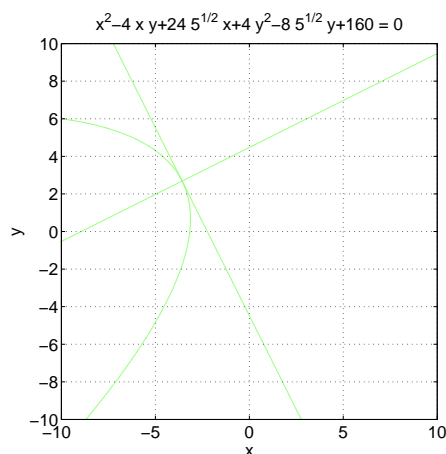
$$9\,x^2 - 24\,x\,y + 16\,y^2 - 130\,x - 160\,y + 1025 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -12 \\ -12 & 16 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 25 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -3/5 & -4/5 \\ 4/5 & -3/5 \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{17}{5} & \frac{19}{5} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 1 & -5 \end{pmatrix}$$

$$(x' - 1)^2 = -8\,(y' + 5)$$

$x^2 - 4\,x\,y + 24\,5^{1/2}\,x + 4\,y^2 - 8\,5^{1/2}\,y + 160 = 0$

$4\,x^2 + 4\,x\,y - 14\,5^{1/2}\,x + y^2 - 12\,5^{1/2}\,y + 60 = 0$

73. Vyšetřete kuželosečku o rovnici:

$$x^2 - 4\,x\,y + 4\,y^2 + 24\,\sqrt{5}x - 8\,\sqrt{5}y + 160 = 0$$

$$\mathsf{A} = \begin{pmatrix} 1 & -2 \\ -2 & 4 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 5 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 1/5 \cdot \sqrt{5} & 2/5 \cdot \sqrt{5} \\ -2/5 \cdot \sqrt{5} & 1/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -8/5 \cdot \sqrt{5} & 6/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} -4 & -2 \end{pmatrix}$$

$$(x' + 4)^2 = -8\,(y' + 2)$$

---

74. Vyšetřete kuželosečku o rovnici:

$$4\,x^2 + 4\,x\,y + y^2 - 14\,\sqrt{5}x - 12\,\sqrt{5}y + 60 = 0$$
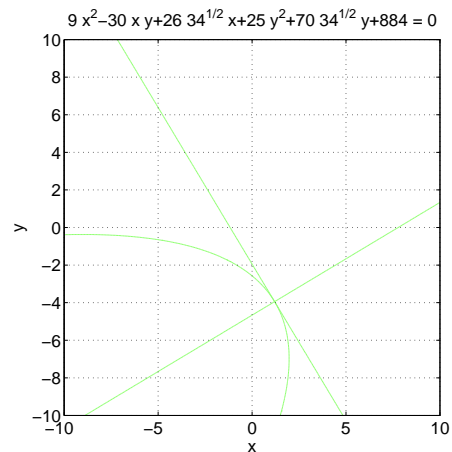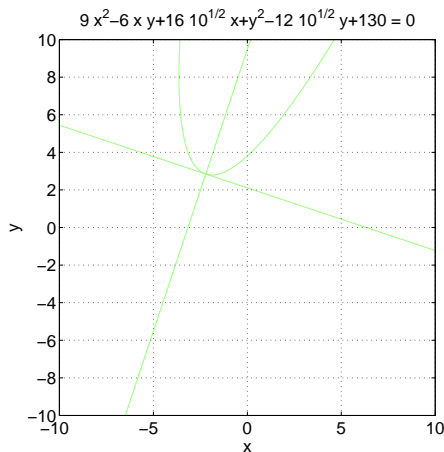
$$\mathsf{A} = \begin{pmatrix} 4 & 2 \\ 2 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 5 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -1/5 \cdot \sqrt{5} & -2/5 \cdot \sqrt{5} \\ 2/5 \cdot \sqrt{5} & -1/5 \cdot \sqrt{5} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} 2 \cdot \sqrt{5} & 0 \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} -2 & -4 \end{pmatrix}$$

$$(y' + 2)^2 = 2\,(x' + 4)$$

9 x²−6 x y+16 10^{1/2} x+y²−12 10^{1/2} y+130 = 0

9 x²−30 x y+26 34^{1/2} x+25 y²+70 34^{1/2} y+884 = 0

75. Vyšetřete kuželosečku o rovnici:

$$9\,x^2 - 6\,x\,y + y^2 + 16\,\sqrt{10}x - 12\,\sqrt{10}y + 130 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -3 \\ -3 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 10 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} 3/10 \cdot \sqrt{10} & 1/10 \cdot \sqrt{10} \\ -1/10 \cdot \sqrt{10} & 3/10 \cdot \sqrt{10} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{7}{10} \cdot \sqrt{10} & \frac{9}{10} \cdot \sqrt{10} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} -3 & 2 \end{pmatrix}$$

$$(x' + 3)^2 = 2\,(y' - 2)$$

---

76. Vyšetřete kuželosečku o rovnici:

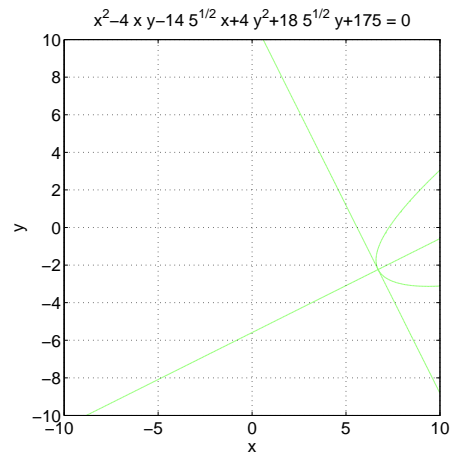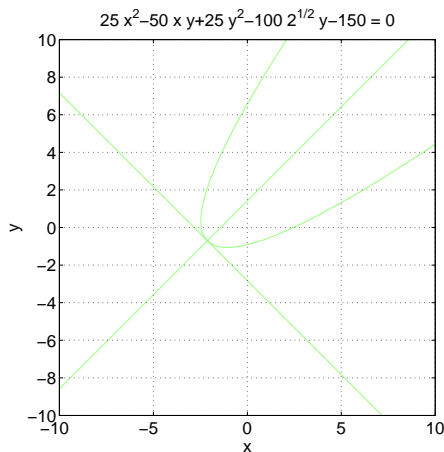$$9\,x^2 - 30\,x\,y + 25\,y^2 + 26\,\sqrt{34}x + 70\,\sqrt{34}y + 884 = 0$$

$$\mathsf{A} = \begin{pmatrix} 9 & -15 \\ -15 & 25 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 34 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{3}{34} \cdot \sqrt{34} & -\frac{5}{34} \cdot \sqrt{34} \\ \frac{5}{34} \cdot \sqrt{34} & -\frac{3}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} \frac{7}{34} \cdot \sqrt{34} & -\frac{23}{34} \cdot \sqrt{34} \end{pmatrix}$$

$$\mathsf{V'} = \begin{pmatrix} -4 & 1 \end{pmatrix}$$

$$(x' + 4)^2 = 10\,(y' - 1)$$

77. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 50\,x\,y + 25\,y^2 - 100\,\sqrt{2}\,y - 150 = 0$$

$$A = \begin{pmatrix} 25 & -25 \\ -25 & 25 \end{pmatrix}$$

$$D = \begin{pmatrix} 0 & 0 \\ 0 & 50 \end{pmatrix} \quad X = \begin{pmatrix} -1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \\ 1/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$V = \begin{pmatrix} -3/2 \cdot \sqrt{2} & -1/2 \cdot \sqrt{2} \end{pmatrix}$$

$$V' = \begin{pmatrix} 1 & 2 \end{pmatrix}$$

$$(x' - 1)^2 = -2\,(y' - 2)$$

78. Vyšetřete kuželosečku o rovnici:

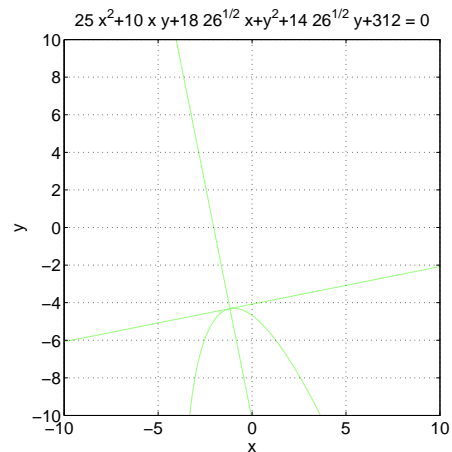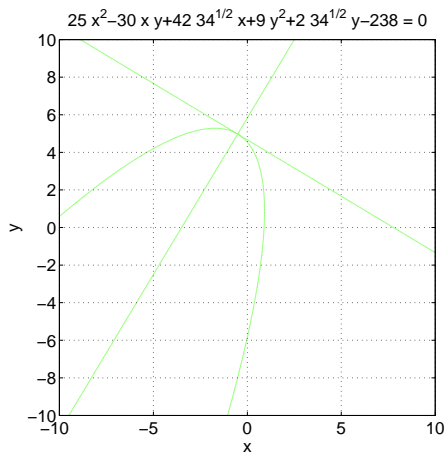$$x^2 - 4\,x\,y + 4\,y^2 - 14\,\sqrt{5}\,x + 18\,\sqrt{5}\,y + 175 = 0$$

$$A = \begin{pmatrix} 1 & -2 \\ -2 & 4 \end{pmatrix}$$

$$D = \begin{pmatrix} 0 & 0 \\ 0 & 5 \end{pmatrix} \quad X = \begin{pmatrix} -2/5 \cdot \sqrt{5} & 1/5 \cdot \sqrt{5} \\ -1/5 \cdot \sqrt{5} & -2/5 \cdot \sqrt{5} \end{pmatrix}$$

$$V = \begin{pmatrix} 3 \cdot \sqrt{5} & -\sqrt{5} \end{pmatrix}$$

$$V' = \begin{pmatrix} -5 & 5 \end{pmatrix}$$

$$(y' + 5)^2 = -2\,(x' - 5)$$

79. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 - 30\,x\,y + 9\,y^2 + 42\,\sqrt{34}x + 2\,\sqrt{34}y - 238 = 0$$

$$\mathsf{A} = \begin{pmatrix} 25 & -15 \\ -15 & 9 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 34 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} \frac{5}{34}\cdot\sqrt{34} & \frac{3}{34}\cdot\sqrt{34} \\ -\frac{3}{34}\cdot\sqrt{34} & \frac{5}{34}\cdot\sqrt{34} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -\frac{3}{34}\cdot\sqrt{34} & \frac{29}{34}\cdot\sqrt{34} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} -3 & 4 \end{pmatrix}$$

$$(x'+3)^2 = -4\,(y'-4)$$

80. Vyšetřete kuželosečku o rovnici:

$$25\,x^2 + 10\,x\,y + y^2 + 18\,\sqrt{26}x + 14\,\sqrt{26}y + 312 = 0$$

$$\mathsf{A} = \begin{pmatrix} 25 & 5 \\ 5 & 1 \end{pmatrix}$$

$$\mathsf{D} = \begin{pmatrix} 0 & 0 \\ 0 & 26 \end{pmatrix} \quad \mathsf{X} = \begin{pmatrix} -\frac{5}{26}\cdot\sqrt{26} & 1/26\cdot\sqrt{26} \\ -1/26\cdot\sqrt{26} & -\frac{5}{26}\cdot\sqrt{26} \end{pmatrix}$$

$$\mathsf{V} = \begin{pmatrix} -3/13\cdot\sqrt{26} & -\frac{11}{13}\cdot\sqrt{26} \end{pmatrix}$$

$$\mathsf{V}' = \begin{pmatrix} 2 & 4 \end{pmatrix}$$

$$(x'-2)^2 = 2\,(y'-4)$$