Implicitní funkce jedné promenne y=f(x) definovana rovnicí F(x,y)=0
Soubor: Ulohy ze Sbirky MAT II

V nasledujicich obrazcich je cervene zakreslena krivka zadana rovnici F(x,y)=0.
Modre je tecna ke grafu implicitne zadane funkce y=f(x) v danem bode A.
Cerne je graf Taylorova polynomu 2. stupne (parabola).

Sb 166 (reseny): Nejprve graf funkce z=F(x,y), jejiz izokrivka pro k=0, tj. F(x,y)=0, pak urcuje implicitne zadanou funkci jedne promenne y=f(x).

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> F:=x^3+y^3-2*x^2-x*y+1;
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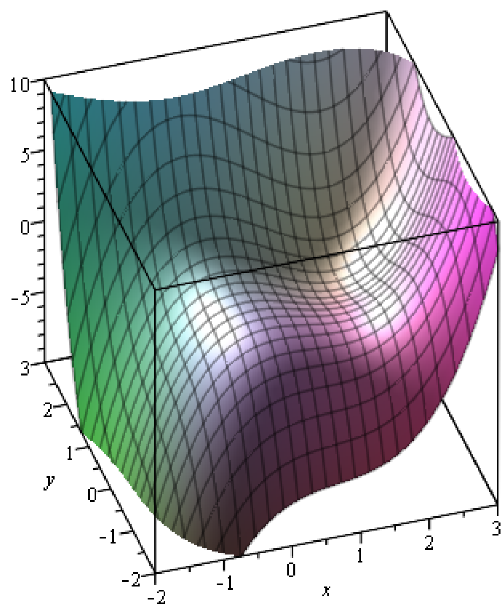
$$F := x^3 + y^3 - 2\,x^2 - x\,y + 1 \tag{1}$$

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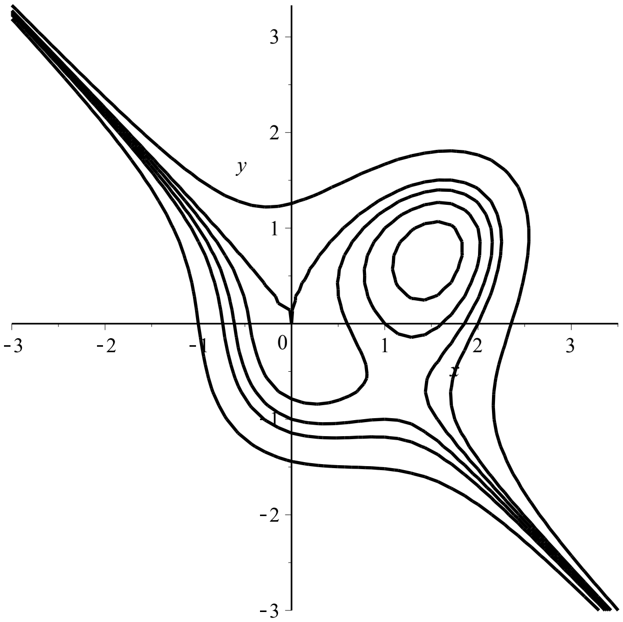
Izokrivky (vrstevnice) F(x,y)=k pro k=-2, -0.5, 0, 0.5, 1, 3



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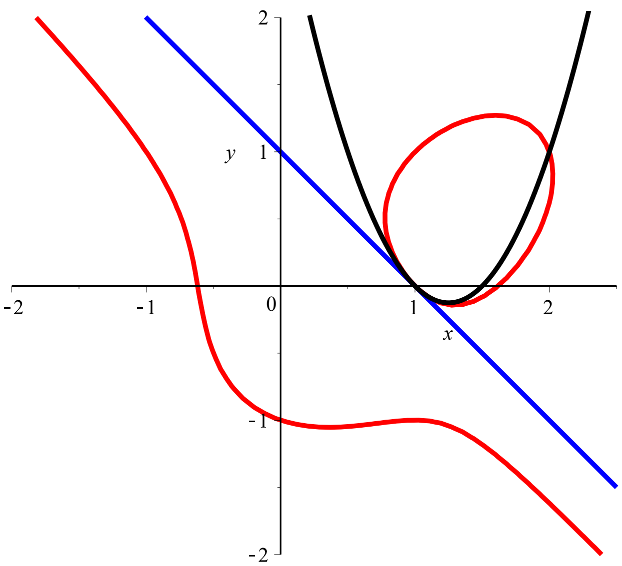
Sb 166 (reseny): Krivka F(x,y)=0, tecna a Tayloruv polynom v okolí bodu A=[1,0]

$$x^3+y^3-2x^2-xy+1=0$$

$$t=1-x$$

$$T_2(x)=1-x+2\,(x-1)^2 \quad \textbf{(2)}$$



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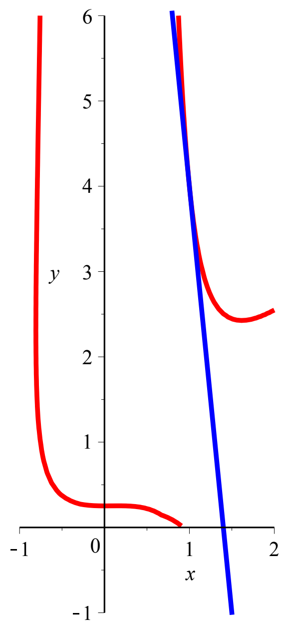
Sb 179: Krivka a tecna v okoli bodu A=[1,4]

$$x^2 y - x^3 - 2\sqrt{y} + 1 = 0$$

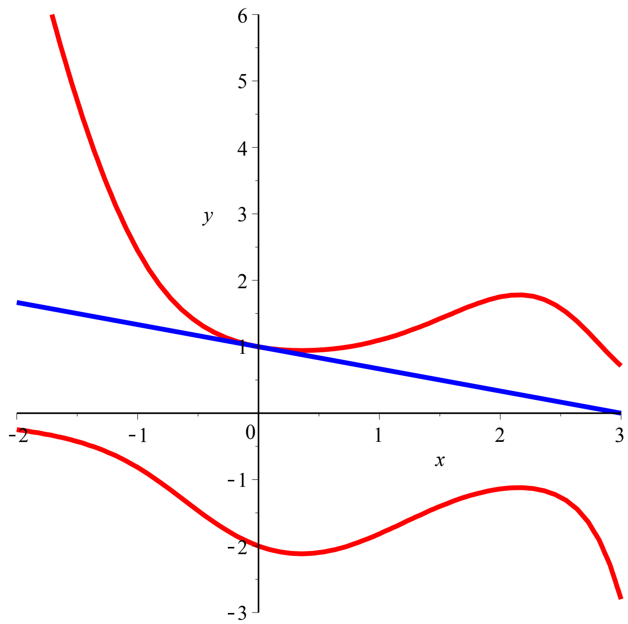
$$t = 14 - 10x \quad \textbf{(3)}$$



Sb 180: Krivka, tecna v okolí bodu A=[0,1]

$$y\,e^{x}+y^{2}-2\,x^{2}\,y-2=0$$

$$y=1-\frac{1}{3}\,x \qquad (4)$$

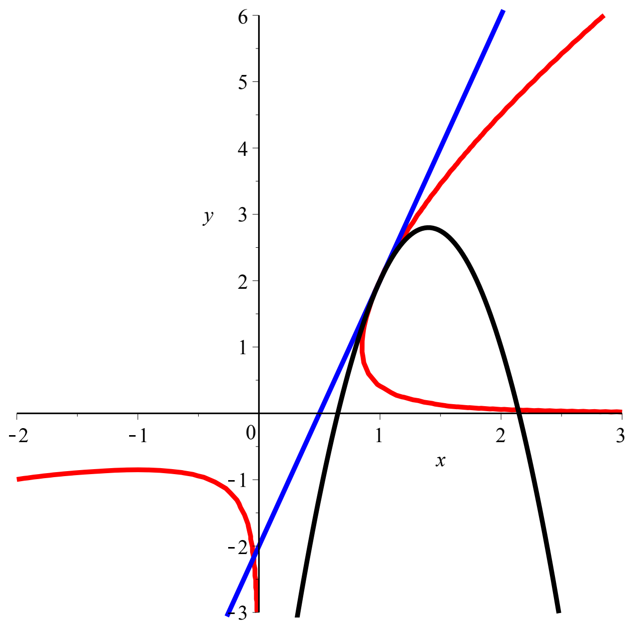


Sb 182: Krivka, tecna a Tayloruv polynom v okolí bodu A=[1,2]

$$x\,y\,e^{x-y}-2\,e^{-1}=0$$

$$y=4\,x-2$$

$$Tay_2(x)=-7+14\,x-5\,x^2 \tag{5}$$

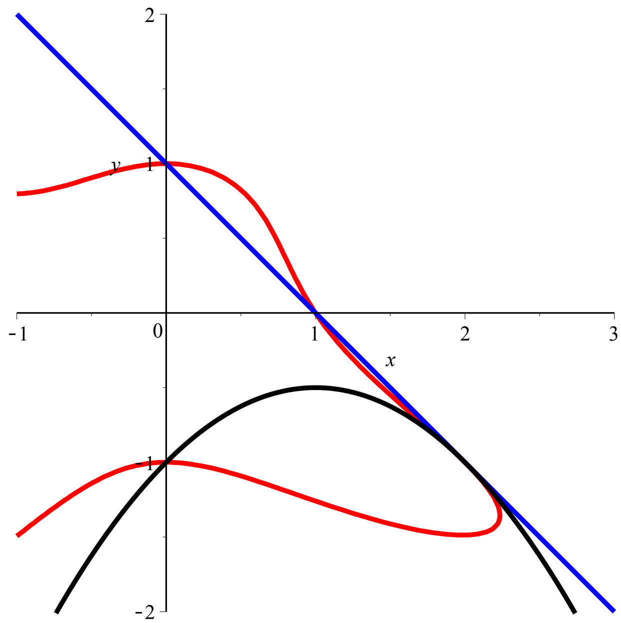


Sb 183: Krivka, tecna a Tayloruv polynom v okolí bodu A=[2,-1]

$$x^3 + 2\,x^2\,y + y^4 - 1 = 0$$

$$y = 1 - x$$

$$T2(x) = 1 - x - 0.5\,(x - 2)^2 \tag{6}$$

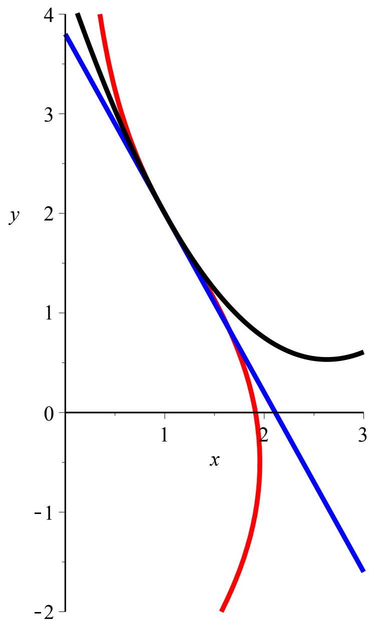


Sb 185: Krivka, tecna a Tayloruv polynom v okolí bodu A=[1,2]

$$x^3 + x y^2 + x y - 7 = 0$$

$$y = \frac{19}{5} - \frac{9}{5} x$$

$$T2(x) = \frac{19}{5} - \frac{9}{5} x + \frac{69}{125} (x - 1)^2 \tag{7}$$



Sb 186: Krivka, tecna a Tayloruv polynom v okolí bodu A=[1,1]

$$x^2 + 2\,y^2 - 2\,x\,y - y = 0$$

$$y = 1$$

$$T2(x) = 1 - (x-1)^2 \tag{8}$$

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