Implicitní funkce jedné promenné
Soubor: Impl_predn_2019

Ve vsech obrázcích je mnozina bodu splnujících rovnici F(x,y)=0 zakreslena cervene.
V okolí daného bodu A=[x0,y0] je touto rovnicí implicitne urcena funkce jedné promenné y=f(x).
Tecna ke grafu této funkce v bode A je zakreslena modrou barvou.
Graf Taylorova polynomu 2. stupne k funkci y=f(x) se stredem v bode x0 je zakreslen cernou barvou.

Pr.1. Krivka, tecna,Tayloruv polynom - grafy v okolí bodu A=[2,0]

```
> x^3 - sin(y) + y^4 - 8 = 0; y = 12*x - 24; Ta[2](x) = 12*x-24 + 6*(x-2)^2;
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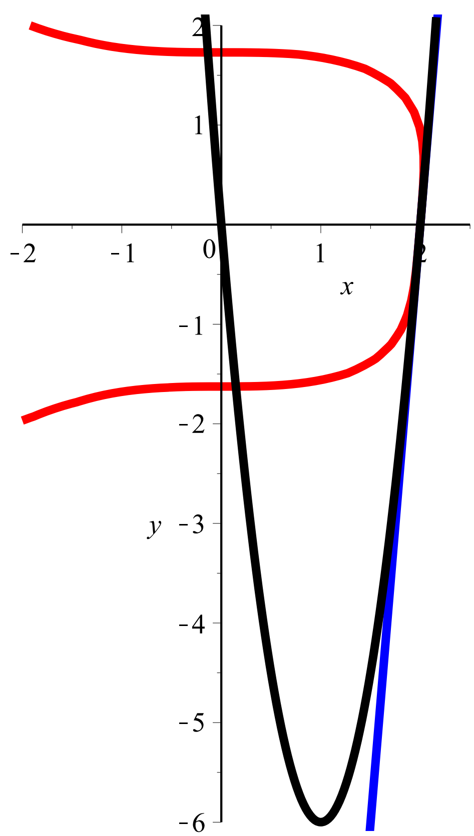
$$x^3 - \sin(y) + y^4 - 8 = 0$$

$$y = 12\,x - 24$$

$$Ta_2(x) = 12\,x - 24 + 6\,(x-2)^2 \tag{1}$$



Pr. 183 Sb. Krivka, tecna,Tayloruv polynom - grafy v okolí bodu A=[2,-1]

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> x^3+y^4+2*x^2*y-1=0;y=-1-(x-2);T2(x)=-1-(x-2)-0.5*(x-2)^2;
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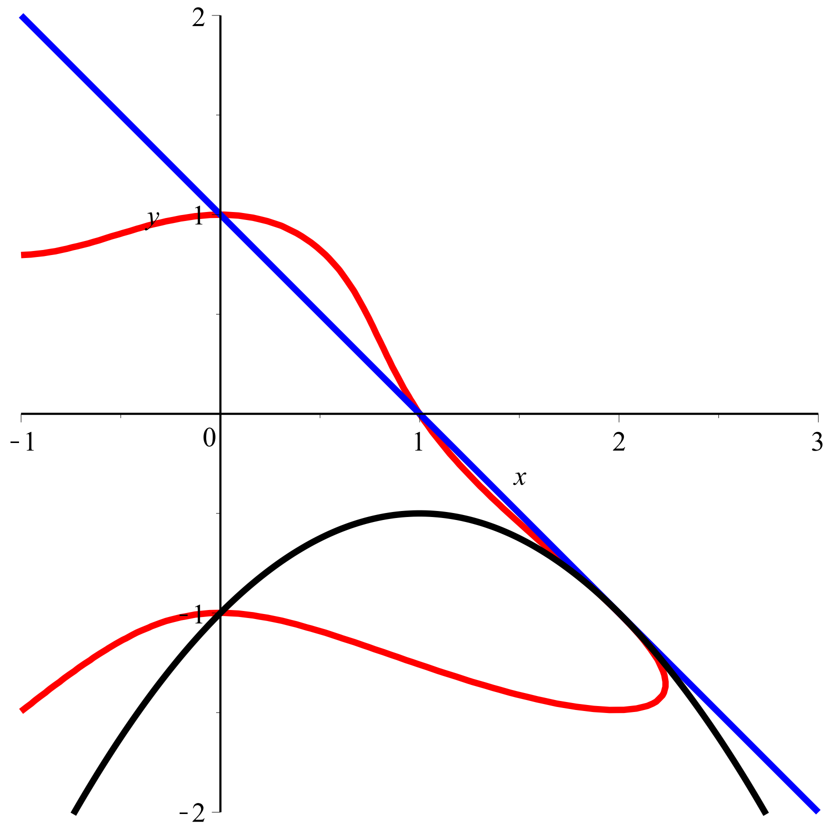
$$x^3+y^4+2\,x^2\,y-1=0$$

$$y=1-x$$

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

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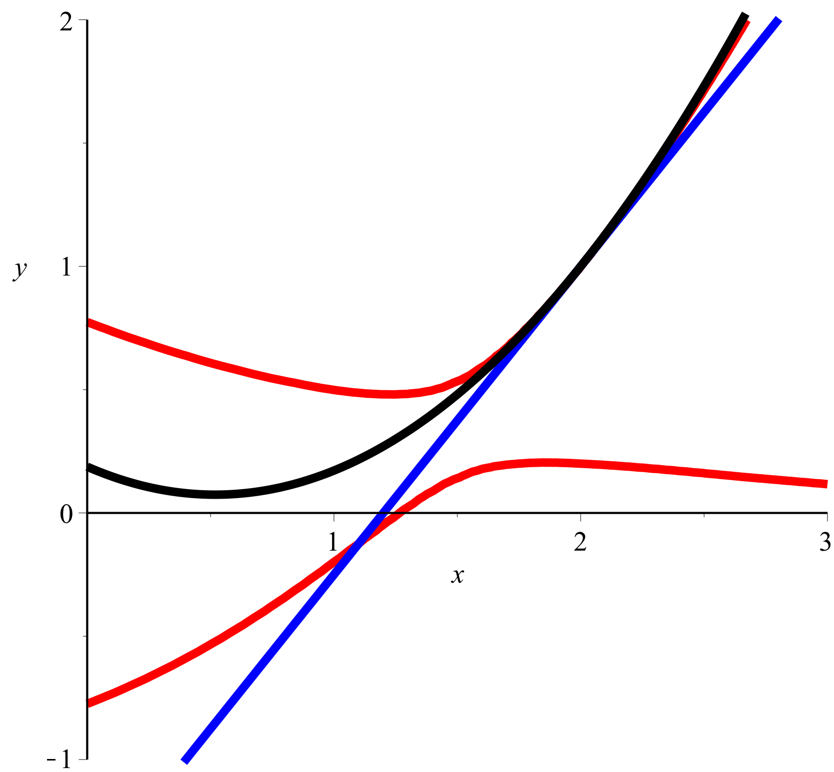
Pr.2. Krivka, tecna,Tayloruv polynom - grafy v okolí bodu A=[2,1]

```
> x^2+3*x^2*y-10*y^2-6*x+6=0;te=1+5*(x-2)/4;Te2(x)=1+5*(x-2)/4+27*
  (x-2)^2/64;
```

$$x^2+3\,x^2\,y-10\,y^2-6\,x+6=0$$

$$te=-\frac{3}{2}+\frac{5}{4}\,x$$

$$Te2(x)=-\frac{3}{2}+\frac{5}{4}\,x+\frac{27}{64}\,(x-2)^2 \qquad \textbf{(3)}$$

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Pr. 3a. Graf funkce z=F(x,y)

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> F:=x^3+x*y^2-3*x*y+1;
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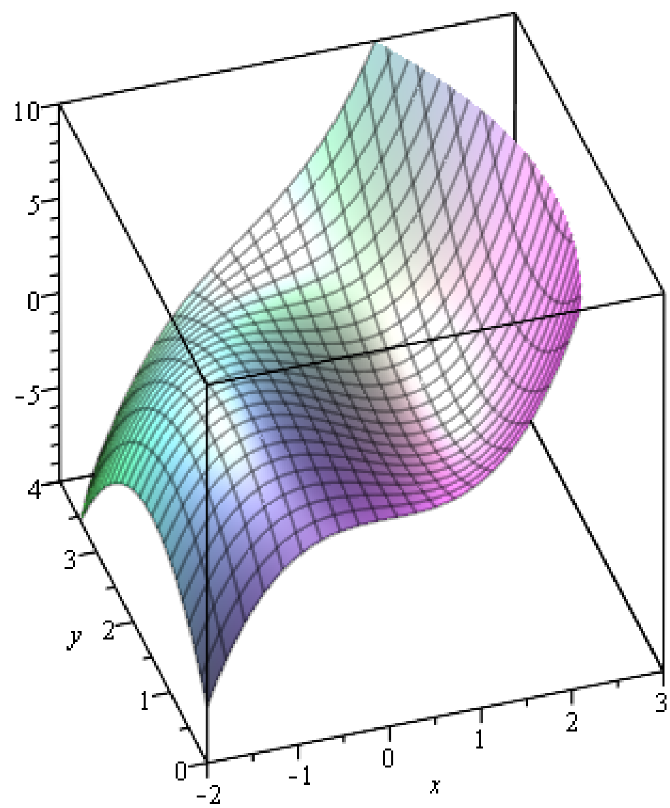
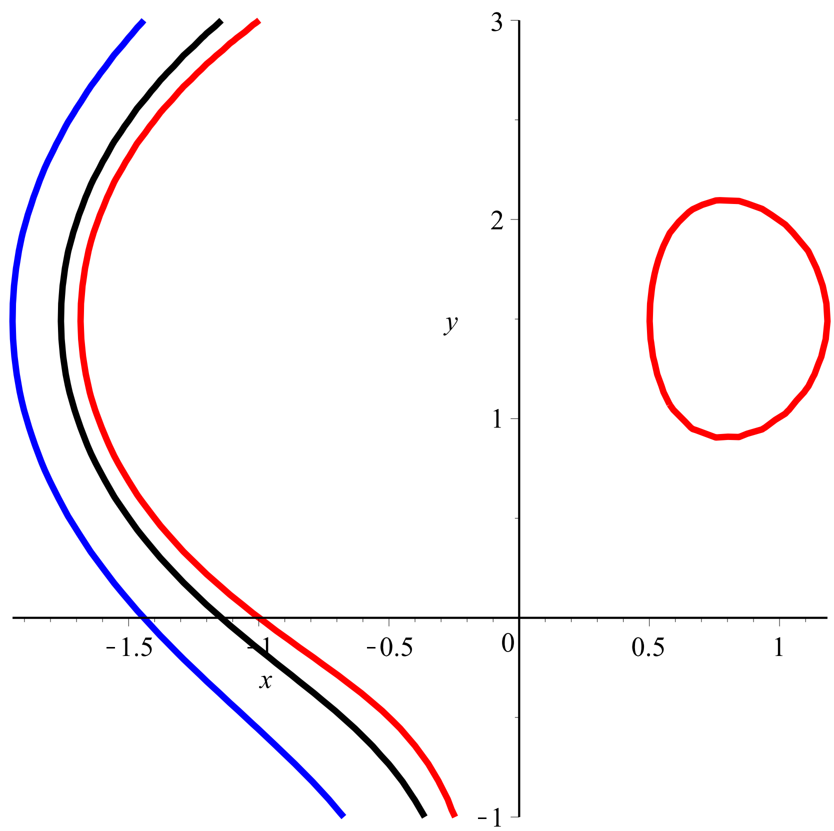
$$F := x^3 + x\,y^2 - 3\,x\,y + 1 \tag{4}$$



Pr. 3b. Izokrivky (vrstevnice) F(x,y)=k pro k=-2, -0.5, 0 (modrá, cerná, cervená barva)



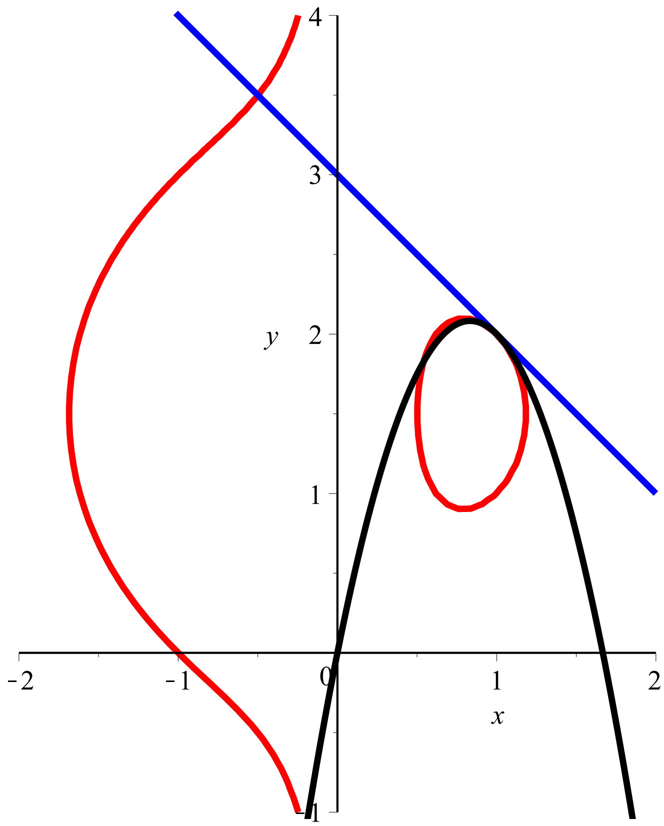
Pr. 3c. **Krivka, tecna, Tayloruv polynom - grafy v okolí bodu A=[1,2]**

> $x^3+x*y^2-3*x*y+1=0;\ y=2-(x-1);\ T2(x)=2-(x-1)-3*(x-1)^2;$

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

$$y=3-x$$

$$T2(x)=3-x-3\,(x-1)^2 \qquad \textbf{(5)}$$



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