

Funkce a jejich vlastnosti

Opakovací definice I

Funkce je množina všech uspořádaných dvojic $[x,y]$ v množině reálných čísel takových, že každému x z definičního oboru je přiřazeno právě jedno y z oboru funkčních hodnot.

Funkce je rostoucí: $\forall x_1, x_2 \in D, x_1 < x_2 \Rightarrow f(x_1) < f(x_2)$

Funkce je klesající: $\forall x_1, x_2 \in D, x_1 < x_2 \Rightarrow f(x_1) > f(x_2)$

Funkce je neklesající: $\forall x_1, x_2 \in D, x_1 < x_2 \Rightarrow f(x_1) \leq f(x_2)$

Funkce je nerostoucí: $\forall x_1, x_2 \in D, x_1 < x_2 \Rightarrow f(x_1) \geq f(x_2)$

Opakovací definice II

sudost funkce: $\forall x \in D, f(x) = f(-x)$

lichost funkce: $\forall x \in D, f(-x) = -f(x)$

omezenost zdola: $\forall x \in D, f(x) \geq d$

omezenost shora: $\forall x \in D, f(x) \leq h$

omezenost : Funkce je omezená, když je omezená shora i zdola

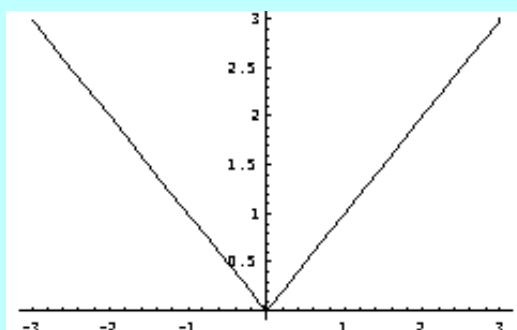
Fce f je prostá $\Leftrightarrow \forall x_1, x_2 \in D(f); x_1 \neq x_2 \Rightarrow f(x_1) \neq f(x_2)$

Fce periodická s periodou k $\Leftrightarrow \forall x \in D(f); f(x+k) = f(x)$

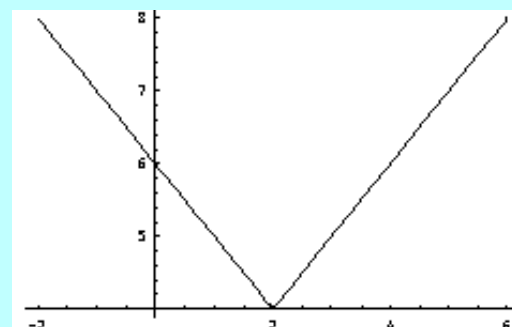
Určete všechny vlastnosti funkcí na následujících
snímcích

Příklady funkcí - program matematika 5.2

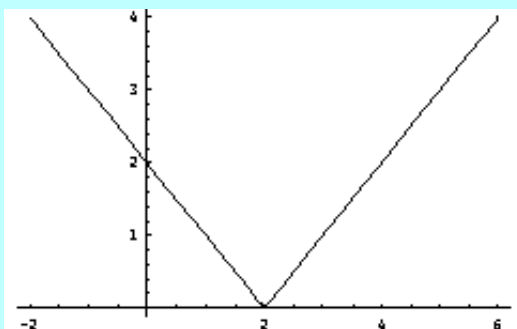
`Plot[Abs[x], {x, -3, 3}]`



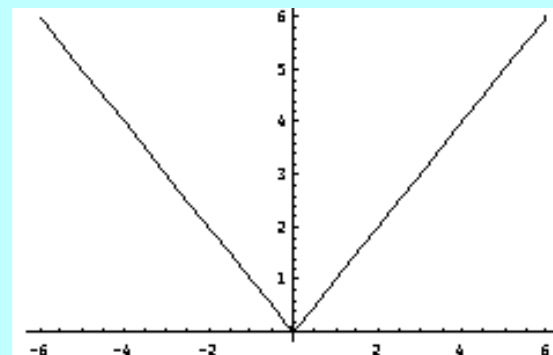
`Plot[Abs[x-2]+4, {x, -2, 6}]`



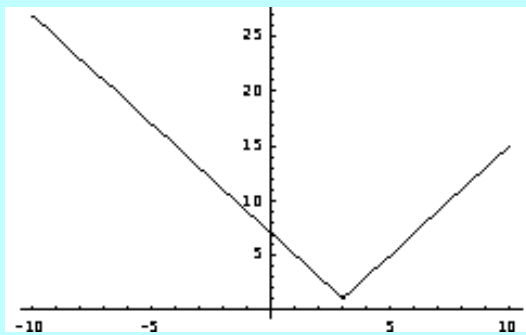
`Plot[Abs[x-2], {x, -2, 6}]`



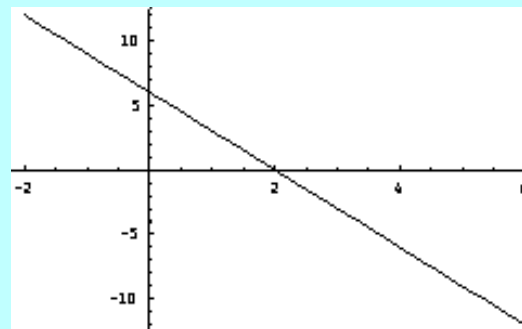
`Plot[x^2/Abs[x], {x, -6, 6}]`



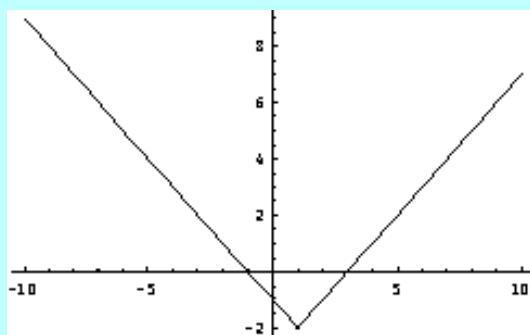
`Plot[2*Abs[x-3]+1,{x,-10,10}]`



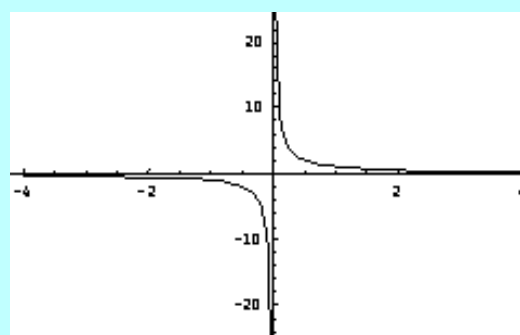
`Plot[-3*x+6,{x,-2,6}]`



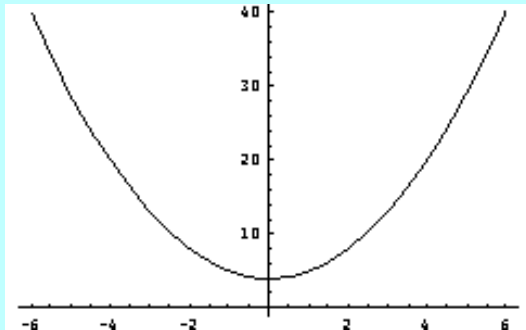
`Plot[Abs[x-1]-2,{x,-10,10}]`



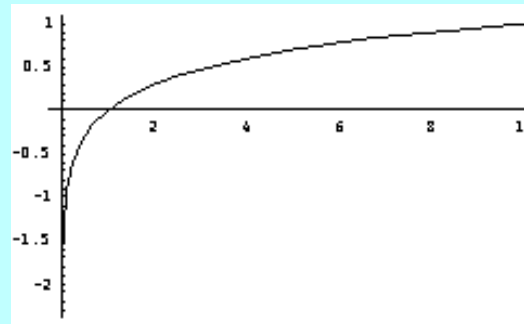
`Plot[1/x,{x,-4,4}]`



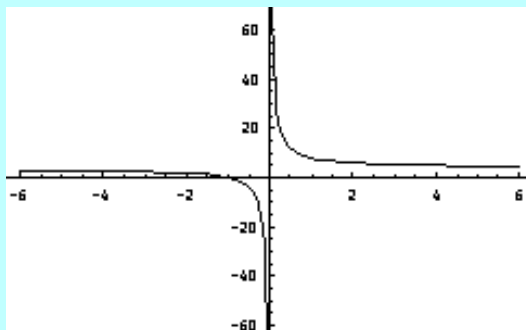
```
Plot[x*x+4,{x,-6,6}]
```



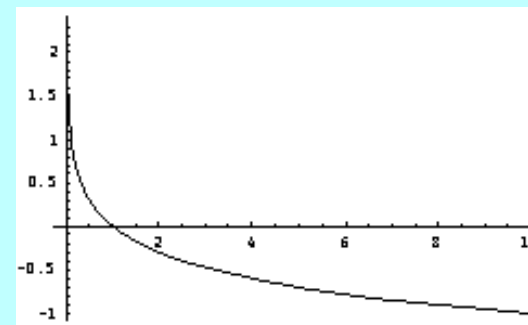
```
Plot[Log[10,x],{x,-10,10}]
```

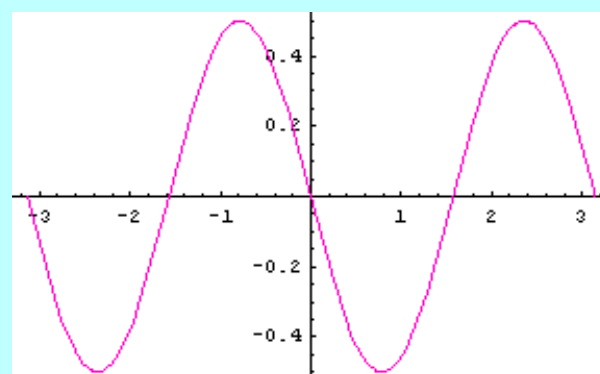
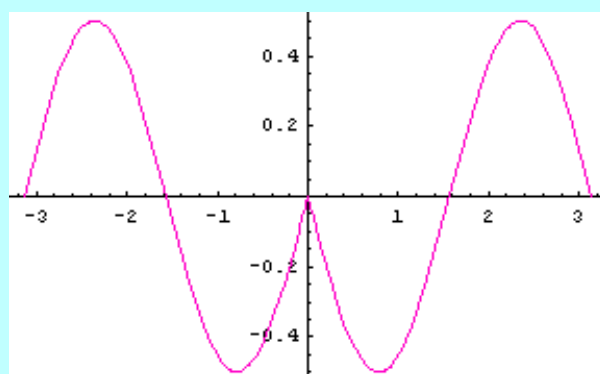
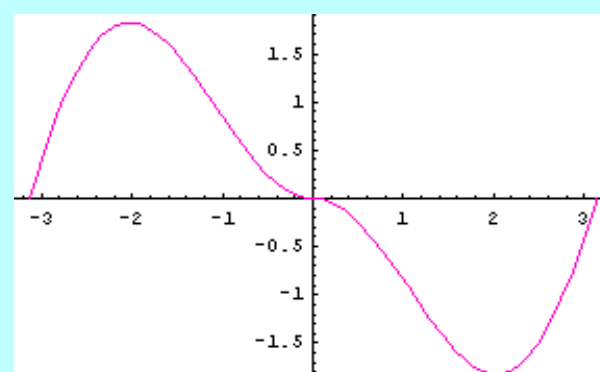
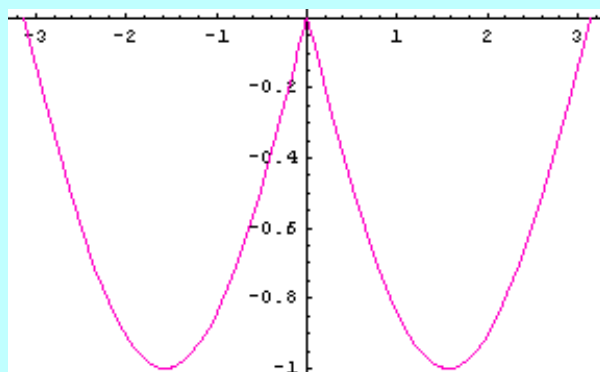


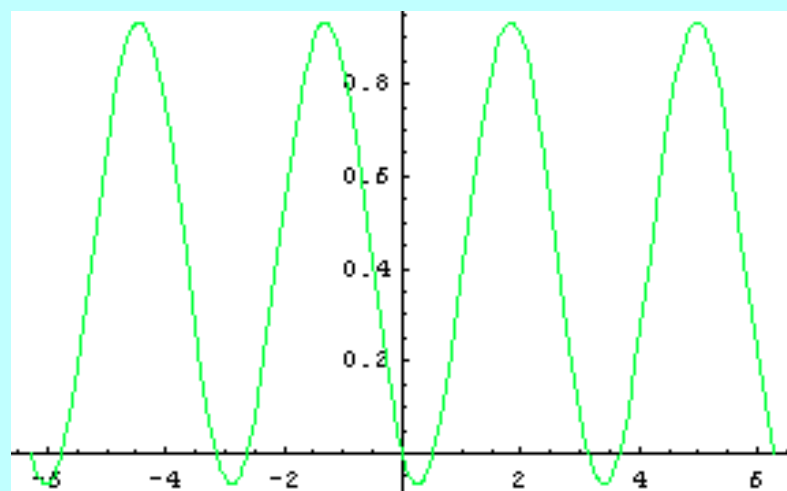
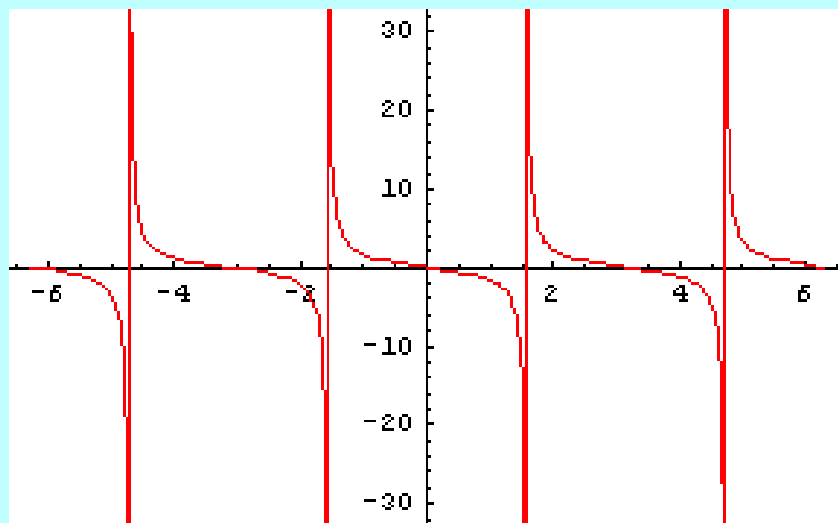
```
Plot[4*x/x^2+4,{x,-6,6}]
```



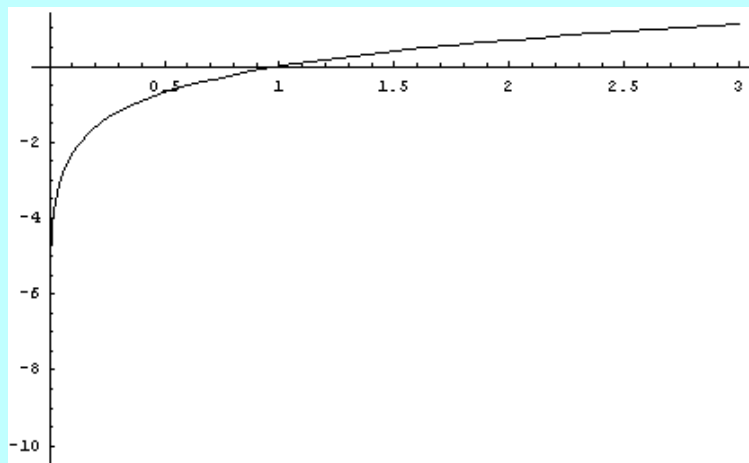
```
Plot[-Log[10,x],{x,-10,10}]
```



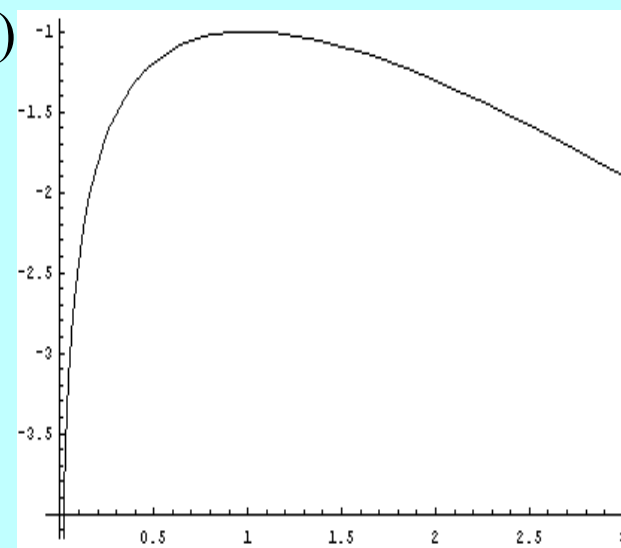




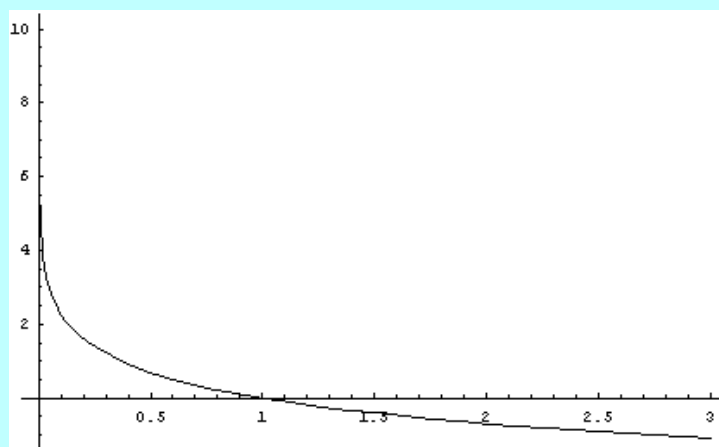
a)



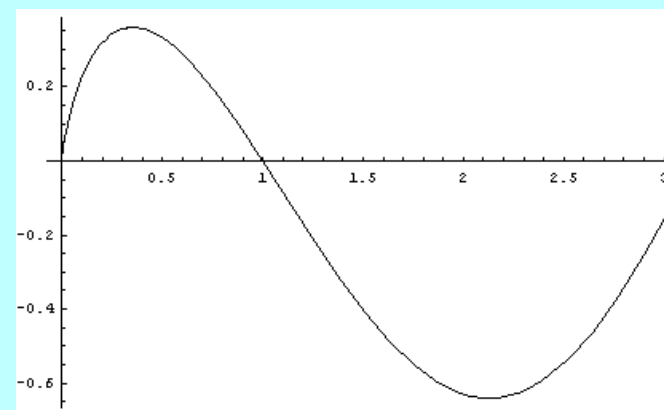
b)



c)



d)



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