

FORMULARIO: grafici delle principali funzioni analitiche
DEFINIZIONI

Dati due insiemi A e B non vuoti, diciamo che è data una funzione f di A in B se è assegnata una legge che ad ogni elemento dell'insieme A fa corrispondere **uno ed un solo** elemento dell'insieme B .

L'insieme A si dice **DOMINIO** della funzione, l'insieme B si dice **CODOMINIO**. $f : A \rightarrow B$
 $x \mapsto y = f(x)$

Ad ogni elemento x dell'insieme A , la funzione f fa corrispondere un elemento $f(x)$ detto **immagine** di x mediante f .

L'elemento x , tale che $y = f(x)$, si dice **controimmagine** di $f(x)$ in A .

LEGENDA

A = dominio della funzione

B = codominio della funzione

I = intervallo in cui la funzione può essere invertita.

FUNZIONI ALGEBRICHE

Funzione costante

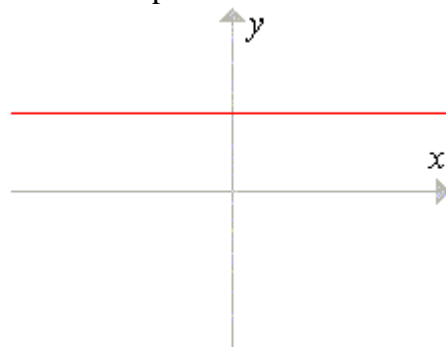
$$y = c$$

$$A = \mathbf{R}$$

$$B = \{c\}$$

$$I = \emptyset$$

Retta parallela all'asse x



Funzione di 1° grado

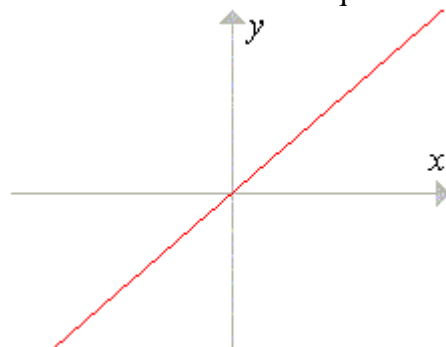
$$y = x$$

$$A = \mathbf{R}$$

$$B = \mathbf{R}$$

$$I = \mathbf{R}$$

Retta bisettrice del I e III quadrante



Funzione di 1° grado

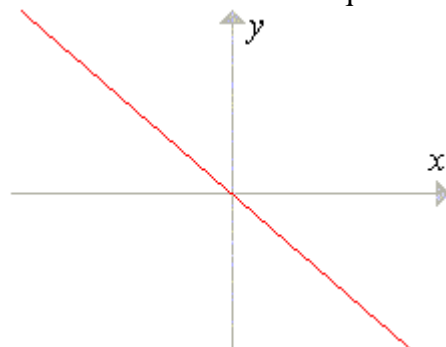
$$y = -x$$

$$A = \mathbf{R}$$

$$B = \mathbf{R}$$

$$I = \mathbf{R}$$

Retta bisettrice del II e IV quadrante



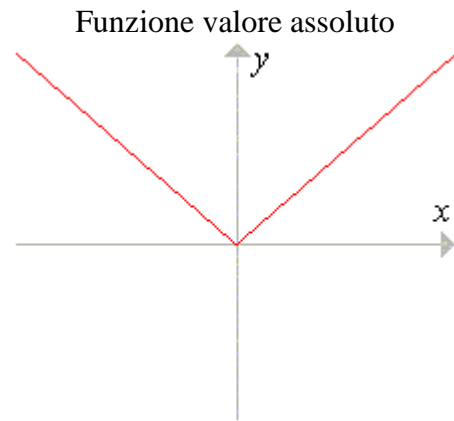
Funzione di 1° grado

$$y = |x|$$

$$A = \mathbf{R}$$

$$B = [0, +\infty)$$

$$I = [0, +\infty)$$



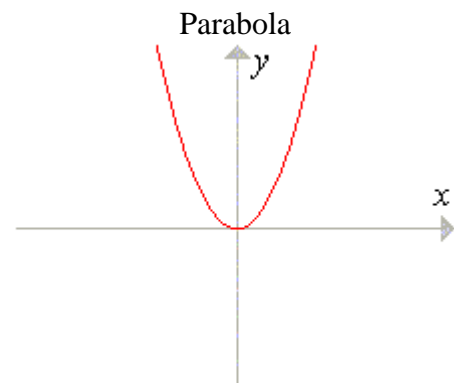
Funzione di 2° grado

$$y = x^2$$

$$A = \mathbf{R}$$

$$B = [0, +\infty)$$

$$I = [0, +\infty)$$



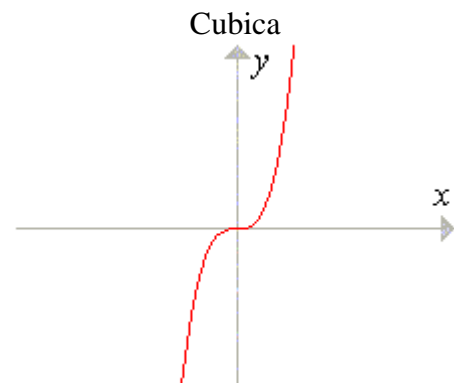
Funzione di 3° grado

$$y = x^3$$

$$A = \mathbf{R}$$

$$B = \mathbf{R}$$

$$I = \mathbf{R}$$

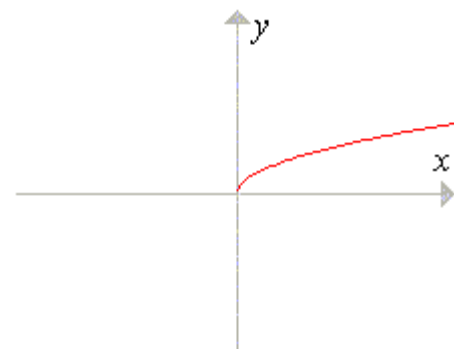


$$y = \sqrt{x}$$

$$A = [0, +\infty)$$

$$B = [0, +\infty)$$

$$I = [0, +\infty)$$

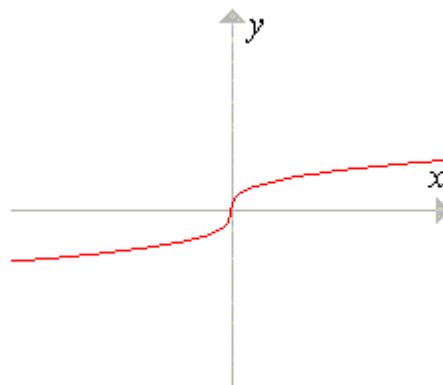


$$y = \sqrt[3]{x}$$

$$A = \mathbf{R}$$

$$B = \mathbf{R}$$

$$I = \mathbf{R}$$

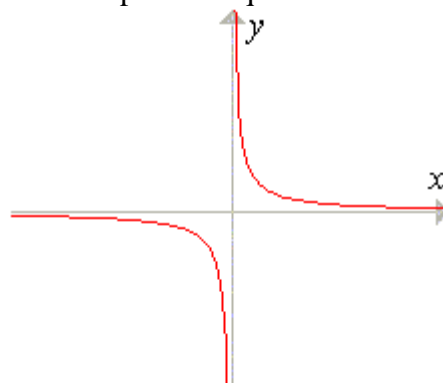


$$y = \frac{1}{x}$$

$$A = \mathbf{R} - \{0\}$$

$$B = \mathbf{R} - \{0\}$$

$$I = \mathbf{R} - \{0\}$$



FUNZIONI ESPONENZIALE E LOGARITMO

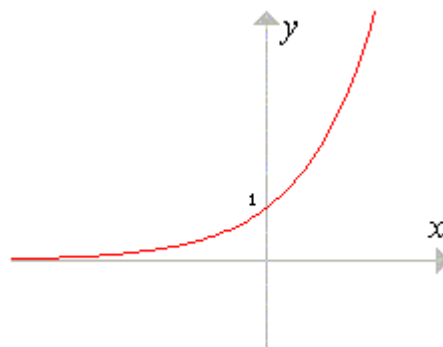
Funzione esponenziale con $a > 1$

$$y = a^x, a > 1$$

$$A = \mathbf{R}$$

$$B = (0, +\infty)$$

$$I = \mathbf{R}$$



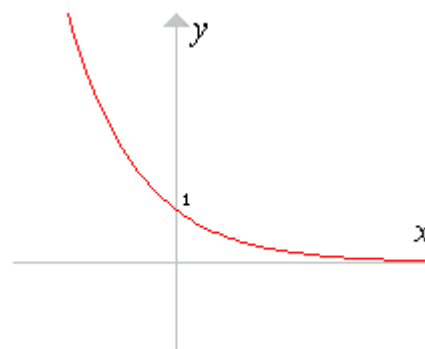
Funzione esponenziale con $0 < a < 1$

$$y = a^x, 0 < a < 1$$

$$A = \mathbf{R}$$

$$B = (0, +\infty)$$

$$I = \mathbf{R}$$



Funzione logaritmica con $a > 1$

$$y = \log_a x, a > 1$$

$$A = (0, +\infty)$$

$$B = \mathbf{R}$$

$$I = (0, +\infty)$$

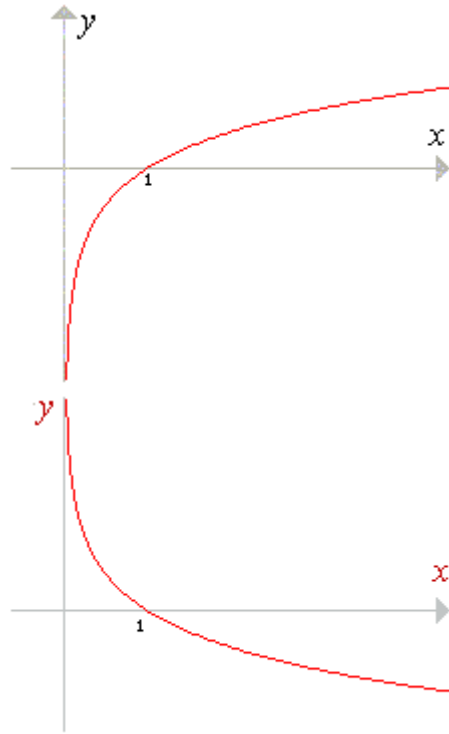
Funzione logaritmica con $a < 1$

$$y = \log_a x, 0 < a < 1$$

$$A = (0, +\infty)$$

$$B = \mathbf{R}$$

$$I = (0, +\infty)$$



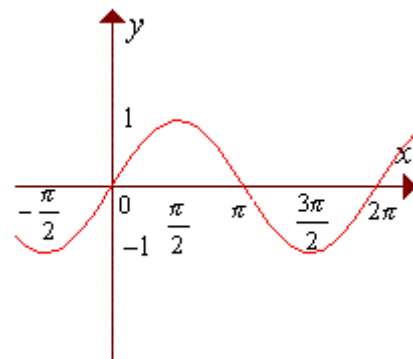
FUNZIONI GONIOMETRICHE

$$y = \text{sen } x$$

$$A = \mathbf{R}$$

$$B = [-1, 1]$$

$$I = \left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$$

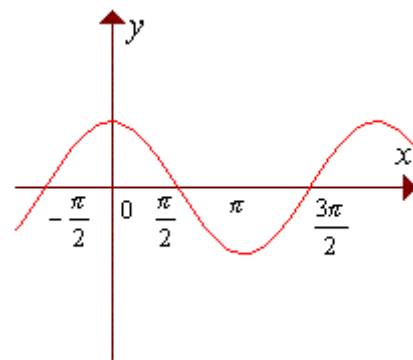


$$y = \text{cos } x$$

$$A = \mathbf{R}$$

$$B = [-1, 1]$$

$$I = [0, \pi]$$

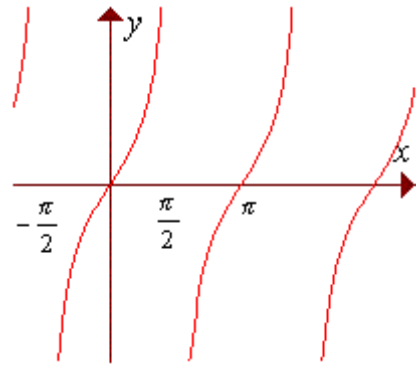


$$y = \operatorname{tg} x$$

$$A = \mathbf{R} - \left\{ \frac{\pi}{2} + k\pi \right\}$$

$$B = \mathbf{R}$$

$$I = \left(-\frac{\pi}{2}, \frac{\pi}{2} \right)$$

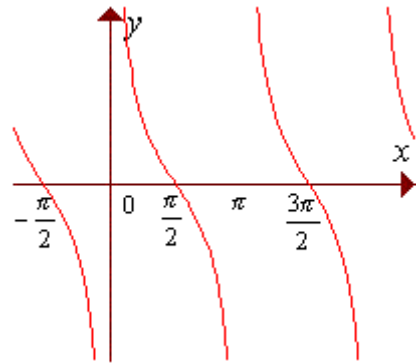


$$y = \operatorname{ctg} x$$

$$A = \mathbf{R} - \{k\pi\}$$

$$B = \mathbf{R}$$

$$I = (0, \pi)$$

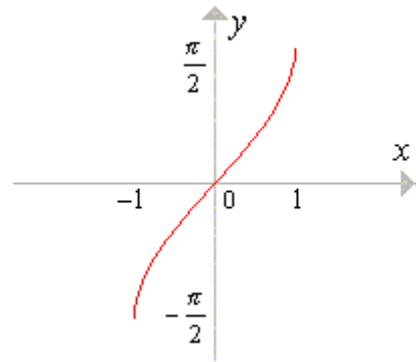


$$y = \operatorname{arcsen} x$$

$$A = [-1, 1]$$

$$B = \left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$$

$$I = [-1, 1]$$

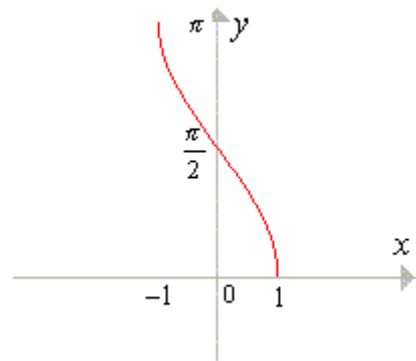


$$y = \operatorname{arccos} x$$

$$A = [-1, 1]$$

$$B = [0, \pi]$$

$$I = [-1, 1]$$

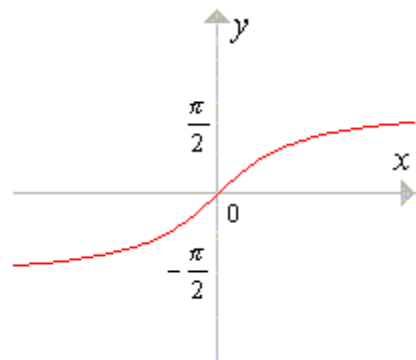


$$y = \operatorname{arctg} x$$

$$A = \mathbf{R}$$

$$B = \left(-\frac{\pi}{2}, \frac{\pi}{2} \right)$$

$$I = \mathbf{R}$$



$$y = \operatorname{arccotg} x$$

$$A = \mathbf{R}$$

$$B = (0, \pi)$$

$$I = \mathbf{R}$$

