

1. Le tre parabole sotto indicate rappresentano tre delle quattro equazioni seguenti:

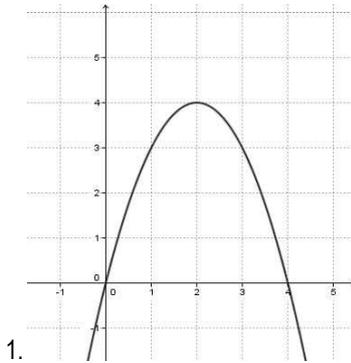
a.  $y = x^2 - 4$

b.  $y = -x^2 + 3x - 1$

c.  $y = x^2 - 3x + 1$

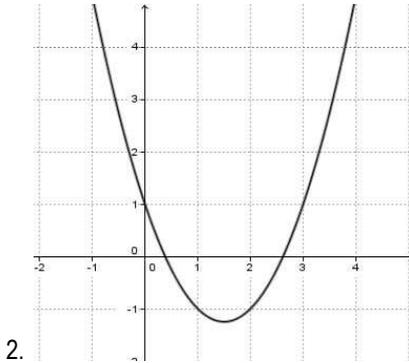
d.  $y = -x^2 + 4x$

Associa a ciascuna parabola la corrispondente equazione:



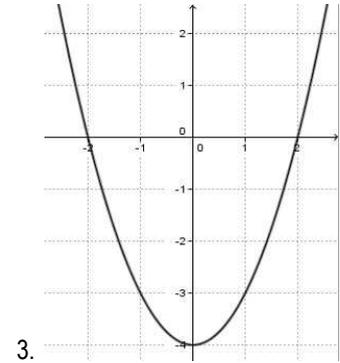
1.

$y = -x^2 + 4x$



2.

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



3.

$y = x^2 - 4$

2. Stabilisci il dominio delle seguenti funzioni:

$$f(x) = \frac{3x}{4x^2+3x-1} = \frac{3x}{4x^2+4x-x-1} = \frac{3x}{4x(x+1)-1(x+1)} = \frac{3x}{(x+1)(4x-1)}$$

$D = \mathbb{R} - \left\{ \frac{1}{4}; -1 \right\}$

$$f(x) = \frac{4}{9x^2+1}$$

$D = \mathbb{R}$

$$f(x) = \frac{2x-3}{4x^2-9} = \frac{2x-3}{(2x-3)(2x+3)} = \frac{1}{2x+3}$$

$D = \mathbb{R} - \left\{ -\frac{3}{2}; \frac{3}{2} \right\}$

3. Data la funzione  $f(x) = \frac{3}{4}x + 3$ , calcola:

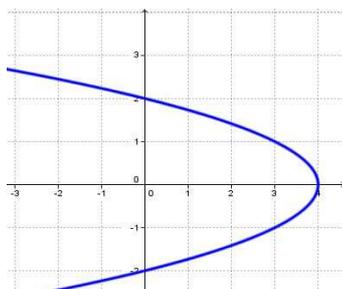
l'immagine di  $-8$

$x = -8 \quad y = -3$

la controimmagine di  $0$

$x = -4 \quad y = 0$

4. Completa la seguente tabella:



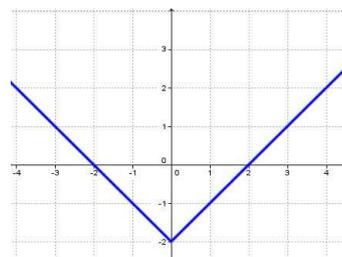
È una funzione? **No**

Dominio:

$D = \{x \in \mathbb{R} | x \leq 4\}$

Codominio:

$C = \mathbb{R}$



È una funzione? **Sì**

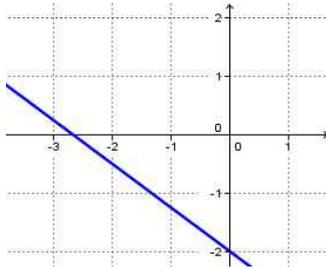
Dominio:

$D = \mathbb{R}$

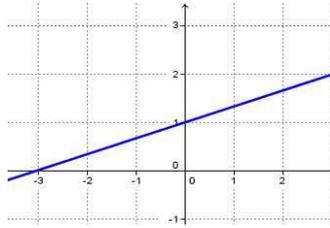
Codominio:

$C = \{y \in \mathbb{R} | y \geq -2\}$

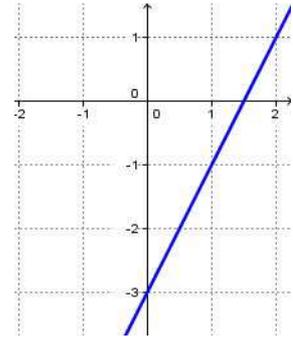
5. Dati i grafici delle seguenti rette, determina le loro equazioni:



$$y = -\frac{3}{4}x - 2$$



$$y = \frac{1}{3}x + 1$$



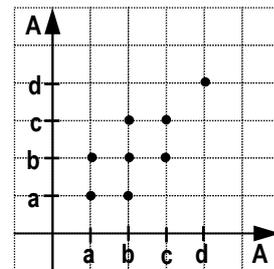
$$y = 2x - 3$$

6. Nel piano cartesiano, rappresenta la seguente relazione definita in  $A = \{a, b, c, d\}$ :

$$\mathcal{R} = \{(a; a), (a; b), (b; a), (b; b), (b; c), (c; b), (c; c), (d; d)\}$$

e stabilisci di quali proprietà gode.

**Riflessiva – Simmetrica**



7. Risolvi le seguenti disequazioni:

$$9x^2 - 6x + 1 < 0 \quad (3x - 1)^2 < 0 \quad S = \emptyset$$

$$x^2 - 6x + 9 > 0 \quad (x - 3)^2 > 0 \quad S = \mathbb{R} - \{3\}$$

$$4x^2 - 4x + 1 \geq 0 \quad (2x - 1)^2 \geq 0 \quad S = \mathbb{R}$$

$$x^2 - 10x + 25 \leq 0 \quad (x - 5)^2 \leq 0 \quad S = \{5\}$$

$$4x^2 + 25 < 0 \quad S = \emptyset$$

$$x^2 + 9 > 0 \quad S = \mathbb{R}$$