

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

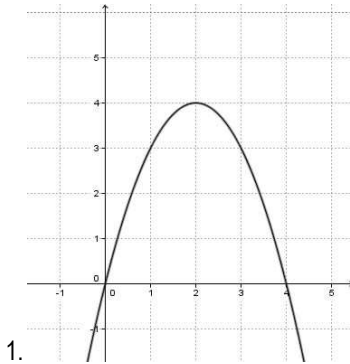
a. $y = x^2 - 4$

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

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

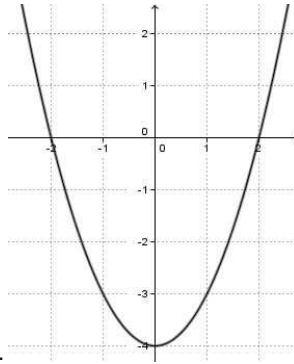
d. $y = -x^2 + 3x - 1$

Associa a ciascuna parabola la corrispondente equazione:



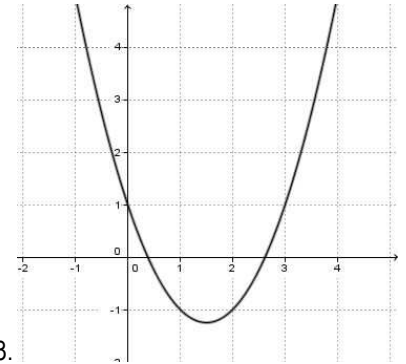
1.

$y = -x^2 + 4x$



2.

$y = x^2 - 4$



3.

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

2. Stabilisci il dominio delle seguenti funzioni:

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

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

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

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

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

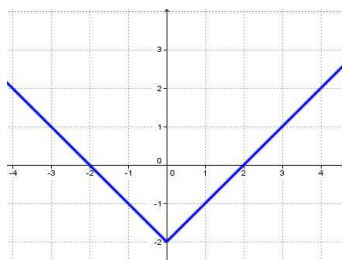
$D = \mathbb{R}$

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

l'immagine di -4 $x = -4$ $y = 0$

la controimmagine di 1 $x = -\frac{8}{3}$ $y = 1$

4. Completa la seguente tabella:



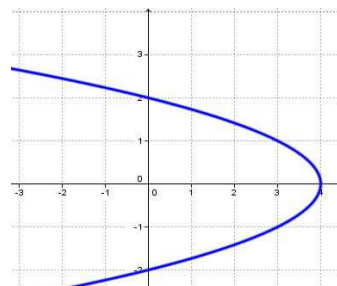
È una funzione? **Si**

Dominio:

$D = \mathbb{R}$

Codominio:

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



È una funzione? **No**

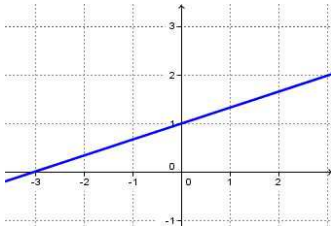
Dominio:

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

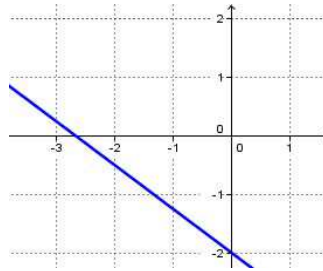
Codominio:

$C = \mathbb{R}$

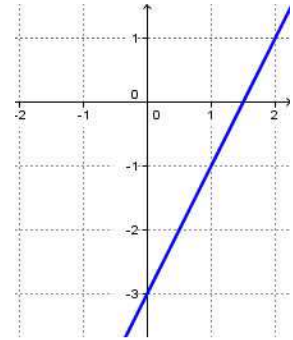
5. Dati i grafici delle seguenti rette, determina le loro equazioni:



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



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



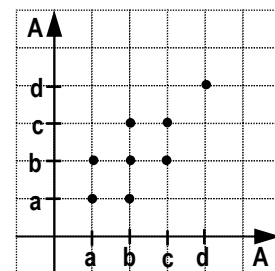
$$y = 2x - 3$$

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:

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

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

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

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

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

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