

COMPITI PER LE VACANZE ESTIVE CLASSE QUARTA

Risolvi le seguenti disequazioni di secondo grado.

1 $x^2 - 3x - 4 > 0$	$[x < -1 \vee x > 4]$	13 $(x+4)^2 \geq 9$	$[x \leq -7 \vee x \geq -1]$
2 $-x^2 + 5x \geq 0$	$[0 \leq x \leq 5]$	14 $6x - 3x^2 \leq 0$	$[x \leq 0 \vee x \geq 2]$
3 $x^2 - 9 < 0$	$[-3 < x < 3]$	15 $5 - x^2 > 0$	$[-\sqrt{5} < x < \sqrt{5}]$
4 $-x^2 + 5x - 4 \leq 0$	$[x \leq 1 \vee x \geq 4]$	16 $(2x-1)^2 \leq 0$	$\left[x = \frac{1}{2}\right]$
5 $x^2 - x + 1 < 0$	[Impossibile]	17 $-\frac{1}{2}x^2 + \frac{1}{3}x + 1 > 0$	$\left[\frac{1-\sqrt{19}}{3} < x < \frac{1+\sqrt{19}}{3}\right]$
6 $9x^2 - 6x + 1 \leq 0$	$\left[x = \frac{1}{3}\right]$	18 $(3x-5)^2 > -10$	$[\forall x \in \mathbb{R}]$
7 $x^2 - 2x + 3 > 0$	$[\forall x \in \mathbb{R}]$	19 $x^2 - 3x \geq 0$	$[x \leq 0 \vee x \geq 3]$
8 $2x^2 - x - 1 \geq 0$	$\left[x \leq -\frac{1}{2} \vee x \geq 1\right]$	20 $(x-1)^2 \leq 0$	$[x = 1]$
9 $-\frac{1}{2}x^2 + 3x - 1 \geq 0$	$[3 - \sqrt{7} \leq x \leq 3 + \sqrt{7}]$	21 $2x^2 - x - 1 < 0$	$\left[-\frac{1}{2} < x < 1\right]$
10 $9x^2 - 6x + 1 > 0$	$[\forall x \in \mathbb{R} - \left\{\frac{1}{3}\right\}]$	22 $-x^2 + 5x < 0$	$[x < 0 \vee x > 5]$
11 $x^2 - 1 < 0$	$[-1 < x < 1]$		
12 $2x^2 - x - 1 < 0$	$\left[-\frac{1}{2} < x < 1\right]$		

RISOLVI LE SEGUENTI DISEQUAZIONI FRAZIONARIE:

23 $\frac{2x}{x^2 + 2x - 9} \leq 0$	$[x < -1 - \sqrt{10} < 0 \leq x < \sqrt{10} - 1]$
24 $\frac{5-x}{x^2-4} < 0$	$[-2 < x < 2 \vee x > 5]$
25 $\frac{x^2-4}{x} > 0$	$[-2 < x < 0 \vee x > 2]$
26 $\frac{x^2-4x}{3-x} < 0$	$[0 < x < 3 \vee x > 4]$
27 $\frac{x^2-4x-5}{3-x} < 0$	$[-1 < x < 3 \vee x > 5]$
28 $\frac{x^2-3x+5}{x^2-4} > 0$	$[x < -2 \vee x > 2]$
29 $\frac{x+1}{2x-x^2} < 0$	$[-1 < x < 0 \vee x > 2]$
30 $\frac{-x^2+3x-5}{8x-x^2} > 0$	$[x < 0 \vee x > 8]$
31 $\frac{x}{x^2-1} \geq 0$	$[-1 < x \leq 0 \vee x > 1]$

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Risolvi i seguenti sistemi di disequazioni.

$$42 \quad \begin{cases} 5x - x^2 \geq 0 \\ 3 - x > 0 \end{cases} \quad [0 \leq x < 3]$$

$$43 \quad \begin{cases} x^2 - x + 1 < 0 \\ 5 - x^2 \geq 0 \end{cases} \quad [\text{Impossibile}]$$

$$44 \quad \begin{cases} \frac{5}{x} > 1 \\ -x^2 \geq -2 \end{cases} \quad [0 < x \leq \sqrt{2}]$$

$$45 \quad \begin{cases} x^2 \geq (x-2)^2 \\ (x+1)(x-2) < x+4 \end{cases} \quad [1 \leq x < 1 + \sqrt{7}]$$

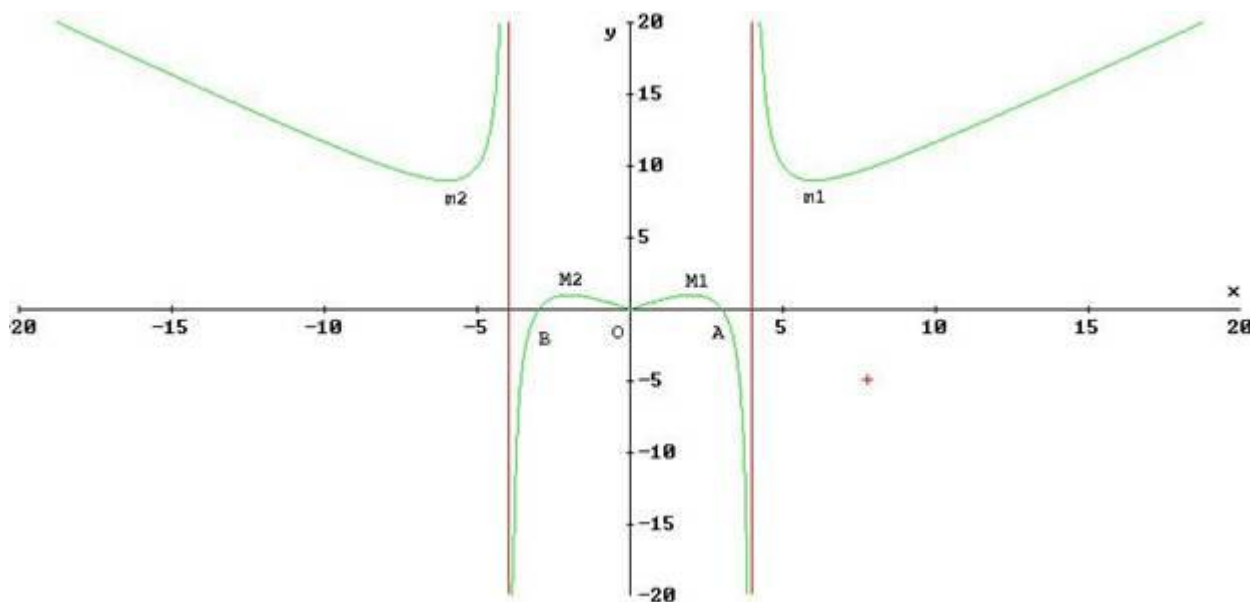
$$46 \quad \begin{cases} x^2 - 3x - 4 \geq 0 \\ 6 > x^2 \end{cases} \quad [-\sqrt{6} < x \leq -1]$$

$$47 \quad \begin{cases} \frac{x}{x^2 - 1} \geq 0 \\ x^2 - 4 < 0 \end{cases} \quad [-1 < x \leq 0 \vee 1 < x < 2]$$

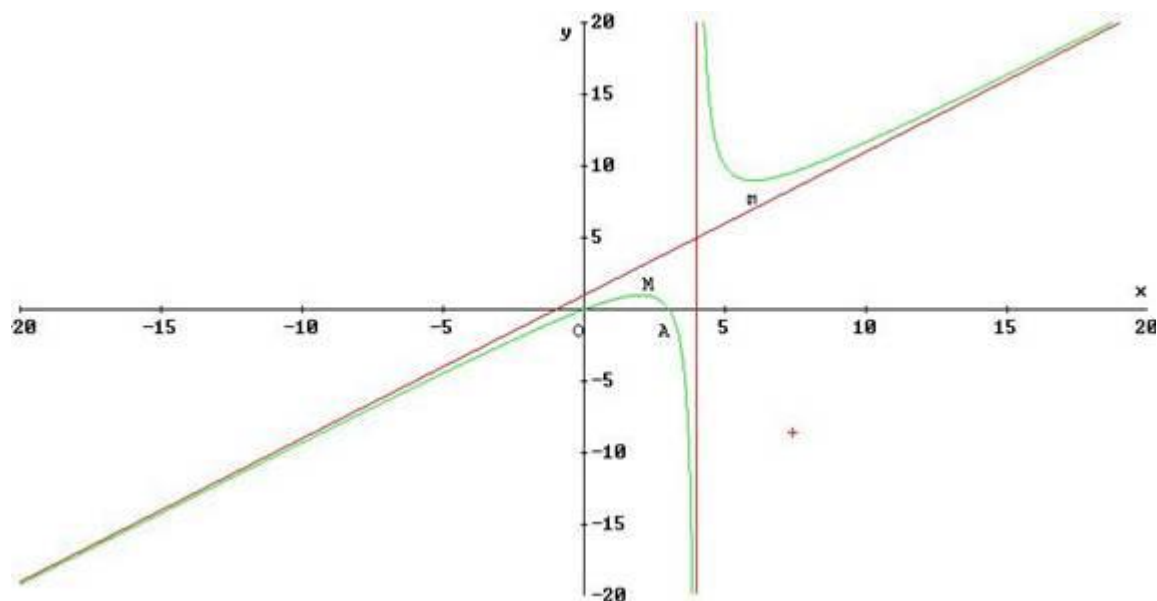
$$48 \quad \begin{cases} x^2 - 3x + 2 \geq 0 \\ x + \frac{1}{x} < 0 \end{cases} \quad [x < 0]$$

$$49 \quad \begin{cases} \frac{x}{x^2 - 6x + 5} \leq 0 \\ -x \leq 0 \end{cases} \quad [1 < x < 5 \vee x = 0]$$

LEGGERE LE CARATTERISTICHE DEI SEGUENTI GRAFICI DI FUNZIONI



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STUDIARE ALGEBRICAMENTE LE SEGUENTI FUNZIONI E RAPPRESENTARLE GRAFICAMENTE:

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

$$y = \frac{-4}{x^2 + 2}$$

$$y = 9 - x^4$$

$$y = \frac{x+1}{x^2-3x}$$

$$y = \frac{7}{x^2-2x}$$

$$y = 3x - 3x^3$$