

Esercitazione di laboratorio di matematica

Problema:

Costruite il grafico delle seguenti funzioni a scalino:

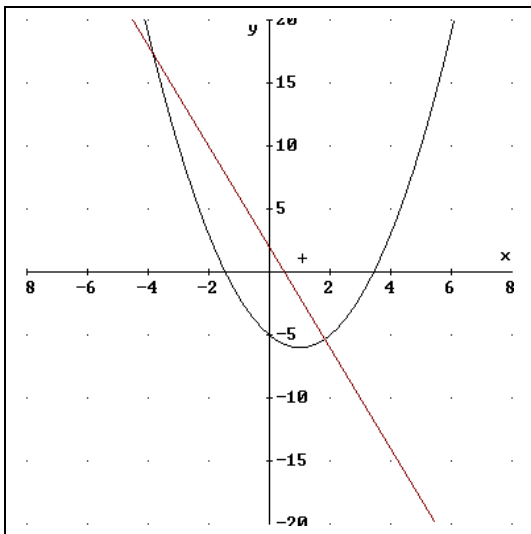
$$\text{a) } f(x) = \begin{cases} x^2 + 8x + 15 & \text{per } x \leq -2 \\ 3 & \text{per } -2 < x < 3 \\ -2x + 10 & \text{per } x \geq 3 \end{cases}$$

$$\text{b) } g(x) = \begin{cases} -x + 1 & \text{per } x < 1 \\ x - 1 & \text{per } x \geq 1 \end{cases}$$

$$\text{c) } h(x) = \begin{cases} x^2 + 6x + 5 & \text{per } x < 0 \\ x^2 - 6x + 5 & \text{per } 0 \leq x \leq 5 \\ x - 5 & \text{per } x > 5 \end{cases}$$

$$\text{d) } i(x) = \begin{cases} -10 & \text{per } x < -5 \\ -\frac{4}{5}x + 3 & \text{per } -5 \leq x < \frac{7}{5} \\ 3 & \text{per } x \geq \frac{7}{5} \end{cases}$$

SOLUZIONI:

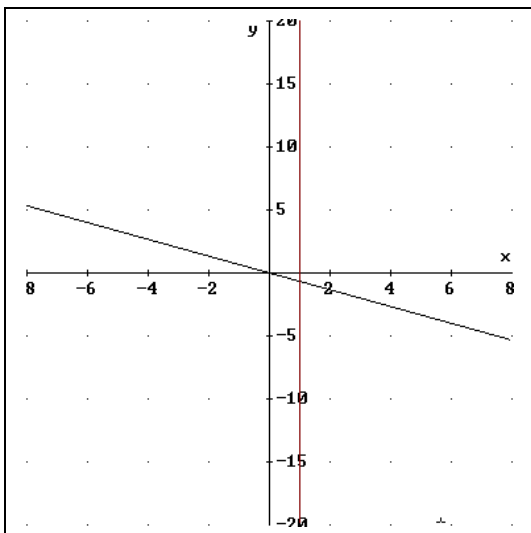


SOLVE([4·x + y - 2 = 0, y - x·x + 2·x + 5 = 0], [x, y])

[x = 2·sqrt(2) - 1 and y = 6 - 8·sqrt(2),

x = - 2·sqrt(2) - 1 and y = 8·sqrt(2) + 6]

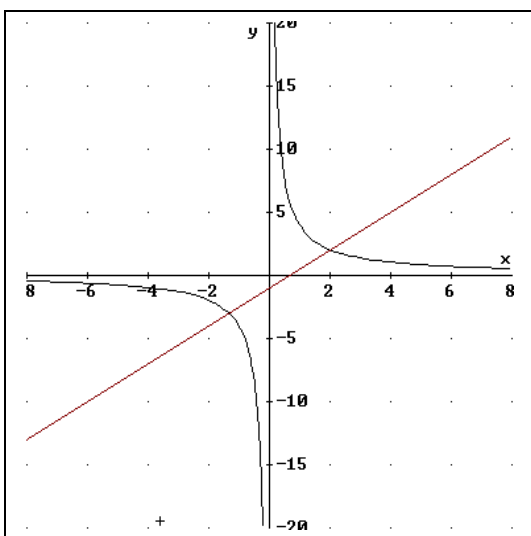
[x = 1.82 and y = -5.31, x = -3.82 and y = 17.3]



SOLVE([2·x + 3·y = 0, x = 1], [x, y])

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

[x = 1 and y = -0.666]



SOLVE([x·y - 4 = 0, 3·x - 2·y = 2], [x, y])

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

[x = 2 and y = 2, x = -1.33 and y = -3]