

List the properties of the function

$$f(x) = 4x^2 - 24x + 35$$

$$f(x) = ax^2 + bx + c$$

general form

$$\text{dom } f :]-\infty, \infty[$$

$$\text{ran } f : a + \uparrow \quad \text{standard form: } f(x) = a(x-h)^2 + k$$

$$f(x) = 4x^2 - 24x + 35$$

$$= 4(x^2 - 6x) + 35$$

$$= 4(x^2 - 6x + 9) + 35 - 4(9)$$

$$= 4(x-3)^2 - 1$$

$$V(3, -1)$$

$$h = \frac{-b}{2a}$$

$$f(3) = 4(3)^2 - 24(3) + 35$$

$$= -1$$



$$\text{ran } f : [-1, \infty[$$

extrema:

$$\text{min} = -1$$

$$\text{max} = \emptyset$$

Intercepts:

y-int ($x=0$)

$$\begin{aligned} f(0) &= 4(0)^2 - 24(0) + 35 \\ &= 35 \end{aligned}$$

$$\text{y-int} = 35$$

x-int ($y=0$)

$$0 = 4x^2 - 24x + 35$$

$$0 = (2x-7)(2x-5)$$

$$2x-7=0$$

$$2x=7$$

$$x = \frac{7}{2}$$

$$2x-5=0$$

$$2x=5$$

$$x = \frac{5}{2}$$

$$\text{x-int} = \left\{ \frac{5}{2}, \frac{7}{2} \right\}$$

Variation:

$$f \uparrow : [3, \infty[$$

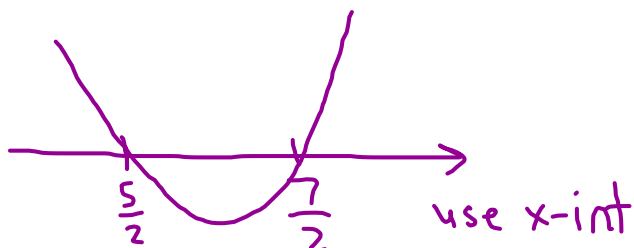
$$f \downarrow :]-\infty, 3]$$

Sign:

$$f + :$$

$$]-\infty, \frac{5}{2}] \cup [\frac{7}{2}, \infty[$$

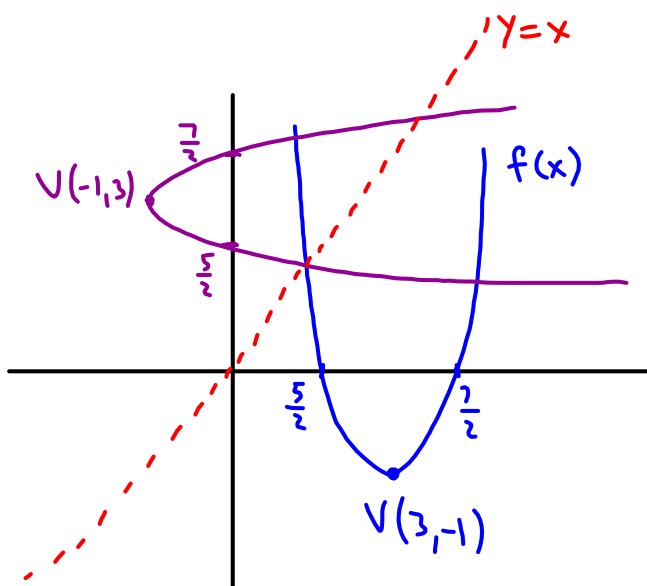
$$f - :]\frac{5}{2}, \frac{7}{2}[$$



Inverse:

$$f^{-1}(x) \quad x \Leftrightarrow y$$

$$V(3, -1) \quad V(-1, 3)$$



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$$f(x)=-2[x+1]+5$$