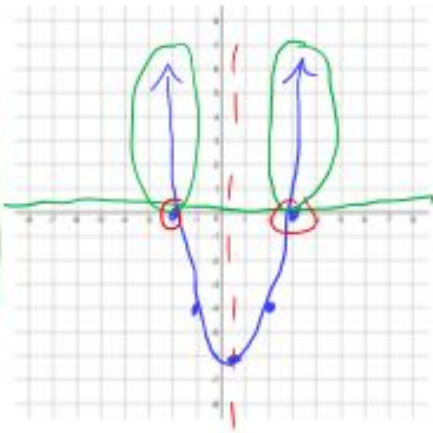


Ex 1 Find all values of x so that: $x^2 - x > 6$

a) using a graph

$$\boxed{\begin{matrix} x > 3 \\ x < -2 \end{matrix}}$$



b) using algebra

$$x^2 - x > 6$$

$$x^2 - x - 6 > 0$$

Find x-ints
(transition from \oplus to \ominus)

$$\begin{array}{r|l} \oplus -6 & (-3, 2) \\ \oplus -1 & -1 \end{array}$$

$$(x-3)(x+2) > 0$$

$$x = 3, -2$$



$$\begin{aligned} x = -4 &\Rightarrow (-4)^2 - (-4) - 6 = 14 \\ x = 0 &\Rightarrow 0^2 - 0 - 6 = -6 \\ x = 4 &\Rightarrow 4^2 - 4 - 6 = 6 \end{aligned}$$

$$\begin{matrix} x < -2 \\ x > 3 \end{matrix}$$

$$x^2 - x - 6 > 0 \quad \text{Let } y = x^2 - x - 6$$

$$y > 0$$

$$h = \frac{-b}{2a} = \frac{-(-1)}{2(1)} = \frac{1}{2} = 0.5$$

$$k = (0.5)^2 - (0.5) - 6 = -6.25$$

$$x = 2 \Rightarrow (2)^2 - 2 - 6 = -4$$

$$x = 3 \Rightarrow 3^2 - 3 - 6 = 0$$

Ex 2 Find all values of x so that: $-2x^2 \geq 12 - 5x$

$$0 \geq 2x^2 - 5x + 12$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(2)(12)}}{2(2)}$$

$$= \frac{5 \pm \sqrt{25 - 96}}{4} = \frac{5 \pm \sqrt{-71}}{4} = \emptyset \text{ NO x-ints}$$



$$x = 0 \Rightarrow 2(0)^2 - 5(0) + 12 = 12$$

NO answer
(never neg)

Ex 3 The height of a ball above the ground (H , in metres) thrown from a building after t seconds is given by:
 $H(t) = -4.9t^2 + 15.8t + 22.8$. When is the ball ~~at most~~ 30m above the ground?

$$30 \geq -4.9t^2 + 15.8t + 22.8 \quad \text{at most}$$

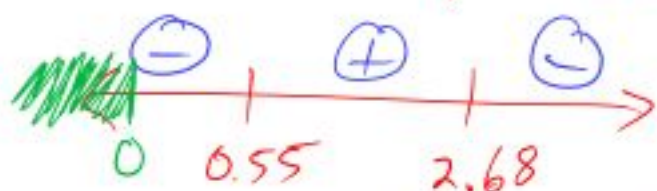
$$0 \geq -4.9t^2 + 15.8t - 7.2$$

$$t = \frac{-(15.8) \pm \sqrt{(15.8)^2 - 4(-4.9)(-7.2)}}{2(-4.9)}$$

$$= 0.55, 2.68$$

$$0 \leq t \leq 0.55$$

$$t \geq 2.68$$



$$x=0 \Rightarrow -4.9(0)^2 + 15.8(0) - 7.2 = -7.2$$

$$x=1 \Rightarrow -4.9(1)^2 + 15.8(1) - 7.2 = 3.7$$

$$x=3 \Rightarrow -4.9(3)^2 + 15.8(3) - 7.2 = -3.9$$

Ex 4 Mr. G is buying green and blue highlighters for marking. The green highlighters cost \$2.50 and the blue highlighters cost \$2.25. He wants to buy at least 15 highlighters but needs at least 8 green highlighters. He can't spend more than \$50. Write a system of inequalities to describe the situation.

$$x = \# \text{ Green}$$

$$y = \# \text{ Blue}$$

$$\text{at least 15} \Rightarrow$$

$$\text{at least 8G} \Rightarrow$$

$$\text{Can't spend more } \Rightarrow$$

\$50

$$x + y \geq 15$$

$$x \geq 8$$

$$2.5x + 2.25y \leq 50$$