

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

$$\begin{aligned} (-1)^2 + 2(-1) - 8 \\ 1 - 2 - 8 = -9 \\ (-1, -9) \end{aligned}$$

$$\begin{aligned} x^2 + 2x - 8 = 0 \\ (x+4)(x-2) = 0 \\ x = -4 \quad x = 2 \end{aligned}$$

y-intercept
(0, -8)

A.O.S. $x = -1$

$$x = -\frac{b}{2a} = \frac{7}{2}$$

$$\left(\frac{7}{2}\right)^2 - 7\left(\frac{7}{2}\right) + 10$$

$$\frac{49}{4} - \frac{49}{2} + 10$$

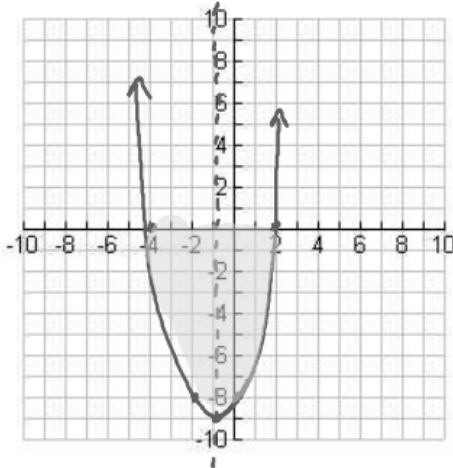
$$\frac{49}{4} - \frac{98}{4} + \frac{40}{4}$$

$$-\frac{9}{4}$$

$$\left(\frac{7}{2}, -\frac{9}{4}\right) = (3.5, -2.25)$$

9. Solve each inequality below.

a. $x^2 + 3x - 6 \leq x + 2$

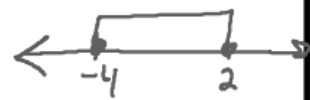


$$x^2 + 2x - 8 \leq 0$$

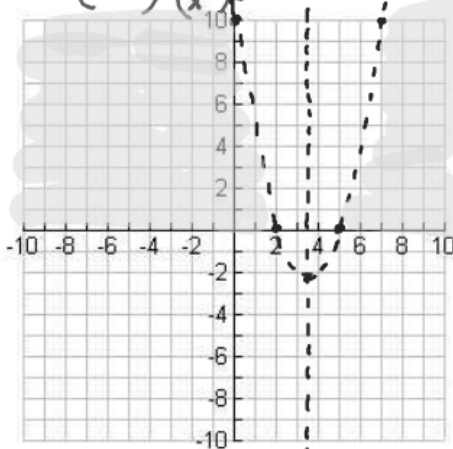


$$-4 \leq x \leq 2$$

$$[-4, 2]$$



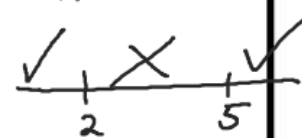
b. $x(7-x) < \left(\frac{10}{x}\right)x$



$$7x - x^2 < 10$$

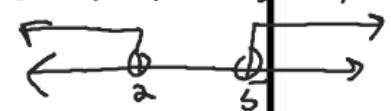
$$0 < x^2 - 7x + 10$$

$$x^2 - 7x + 10 > 0$$



$$x < 2 \text{ or } x > 5$$

$$(-\infty, 2) \cup (5, \infty)$$



$$x^2 - 7x + 10 = 0$$

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

$$x = 5 \quad x = 2$$

y-intercept
(0, 10)

A.O.S. $x = \frac{7}{2}$

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

$$= \frac{4}{2} = 3$$

$$(3)^2 - 6(3) - 7$$

$$9 - 18 - 7$$

$$-16$$

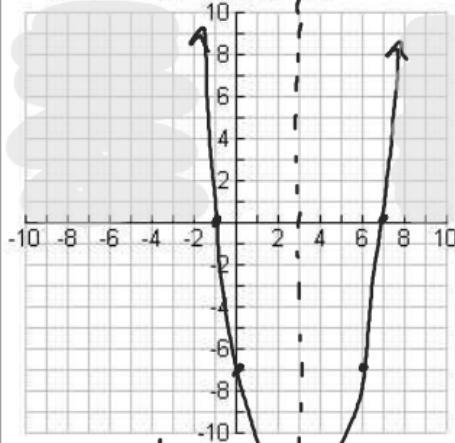
$$(6, -16)$$

$$X^2 - 6x - 7 = 0$$

$$(x-7)(x+1) = 0$$

$$x=7 \quad x=-1$$

c. $x^2 - 4x - 5 \geq 2x + 2$



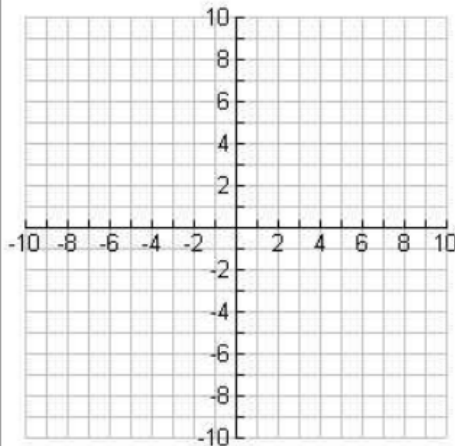
Y-intercept
(0, -7)

A.O.S $x=3$

10. Graph the system of inequalities

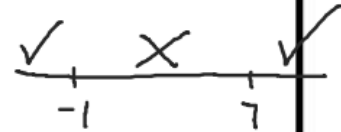
$$y \leq -x^2 + 3$$

$$y \geq x^2 + 2x - 4$$



$$4 + 12 - 7$$

$$x^2 - 6x - 7 \geq 0$$



$$x \leq -1 \text{ or } x \geq 7$$

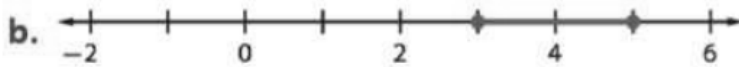
$$(-\infty, -1] \cup [7, \infty)$$



$(-\infty, 0) \cup (2, 5)$

11. Here are some descriptions of solutions for several inequalities. Describe each solution using interval notation.

a. $x < -2$ or $x > 0$ $(-\infty, -2) \cup (0, \infty)$



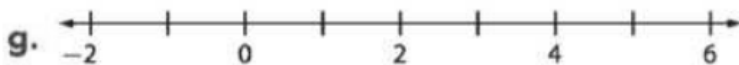
$[3, 5]$

c. $0 \leq x < 1$ $[0, 1)$



e. $x \leq -1$ or $x \geq 7$ $(-\infty, -1] \cup [7, \infty)$

f. The inequality is true for all values of x . $(-\infty, \infty)$



(\emptyset)