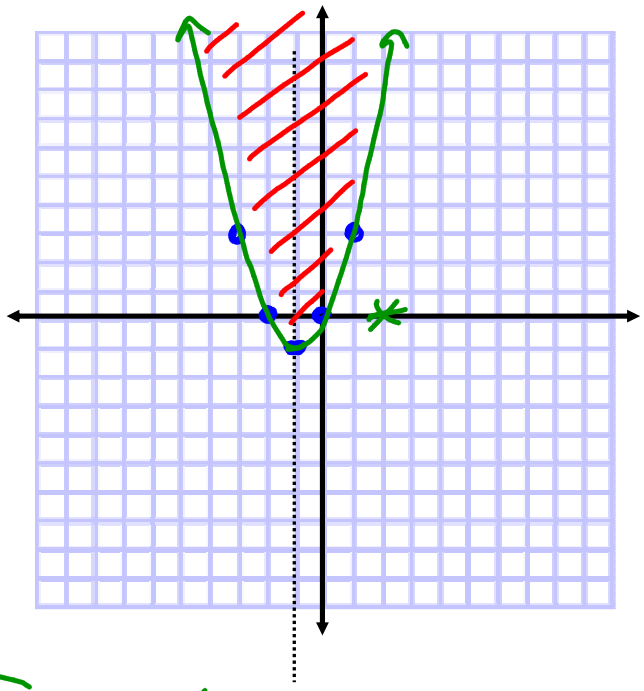
From the 4.9 Worksheet:



10.) $y \geq x^2 + 2x + 0$

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

$(-1, -1)$

$y = (-1)^2 + 2(-1)$

$y = -1$

$(1, 3)$

$y = (1)^2 + 2(1) = 3$

Test $(2, 0)$

$y \geq x^2 + 2x$

$0 \geq 2^2 + 2(2)$

$0 \geq 4$ NO

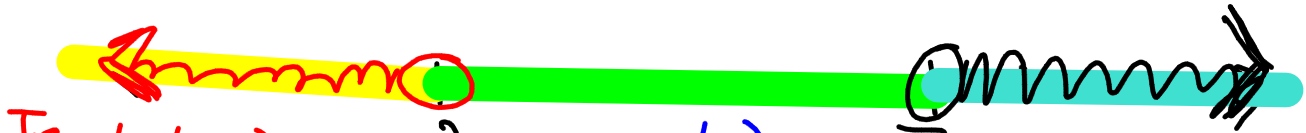
12. $x^2 - 5x - 14 > 0$

$x^2 - 5x - 14 = 0$

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

$x - 7 = 0 \quad x + 2 = 0$

$x = 7 \quad x = -2$



Test (-3)

$(-3)^2 - 5(-3) - 14 \stackrel{?}{>} 0$

$9 + 15 - 14 > 0$

$10 > 0$

Yes

Test (0)

$0^2 - 5(0) - 14 \stackrel{?}{>} 0$

$-14 > 0$

No

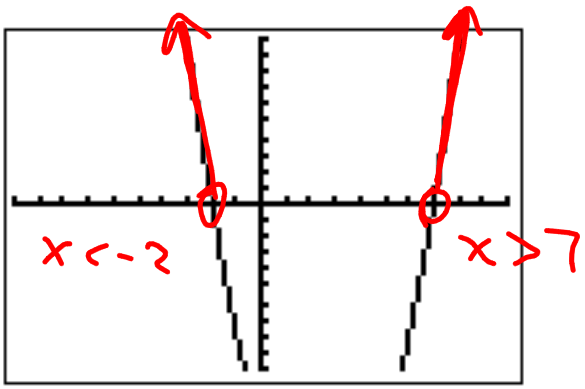
Test (8)

$8^2 - 5(8) - 14 \stackrel{?}{>} 0$

$10 > 0$

Yes

$x < -2$ OR $x > 7$



18. Construction Incident A hammer is dropped from the top of a 500 foot tall building being constructed. The height of the hammer can be modeled by $h = -16t^2 + 500$ where h is the height (in feet) and t is the time (in seconds). A construction worker, who is busy on a floor that is 100 feet from the ground, sees the hammer fall. Write an inequality that shows when the hammer is above the construction worker.

$$-16t^2 + 500 > 100$$

19. For what values of t is the hammer above the construction worker? Show evidence/how you got your answer.

$$-16t^2 + 500 > 100$$
$$-500 \quad -500$$
$$\frac{-16t^2}{-16} > \frac{-400}{-16}$$
$$t^2 < 25$$
$$t < 5 \text{ sec}$$