

Homework Answer Key

25. $h(t) = -16t^2 + 20t + .5$

$$a = -16$$

$$b = 20$$

$$c = .5$$

$$x = \frac{-20 \pm \sqrt{20^2 - 4(-16)(.5)}}{2(-16)} = \frac{-20 \pm \sqrt{432}}{-32}$$

$$x = \frac{-20 + \sqrt{432}}{-32} \approx \text{~~-.02~~}$$

$$x = \frac{-20 - \sqrt{432}}{-32} \approx 1.27$$

APPROX
1.27 SECONDS

26. $h(t) = -16t^2 + 125t + 3$

$$a = -16$$

$$b = 125$$

$$c = 3$$

$$x = \frac{-125 \pm \sqrt{(125)^2 - 4(-16)(3)}}{2(-16)} = \frac{-125 \pm \sqrt{15817}}{-32}$$

$$x = \frac{-125 + \sqrt{15817}}{-32} \approx \text{~~-.02~~}$$

$$x = \frac{-125 - \sqrt{15817}}{-32} \approx 7.84$$

Approx
7.84 sec

27. $h(t) = -16t^2 + 0t + 12$

$$a = -16$$

$$b = 0$$

$$c = 12$$

$$x = \frac{0 \pm \sqrt{0^2 - 4(-16)(12)}}{2(-16)} = \frac{\pm \sqrt{768}}{-32}$$

$$x = \frac{-\sqrt{768}}{-32} \approx .87$$

$$x = \frac{+\sqrt{768}}{-32} \text{ WILL BE NEGATIVE NO NEED TO SOLVE}$$

APPROX
.87 SEC

28. $h(t) = -16t^2 + 15t + 12$

$a = -16$

$b = 15$

$c = 12$

$$h(t) = \frac{-15 \pm \sqrt{15^2 - 4(-16)(12)}}{2(-16)} = \frac{-15 \pm \sqrt{993}}{-32}$$

$$h(t) = \frac{-15 - \sqrt{993}}{-32} \approx 1.45$$

Approx
1.45 sec

$$h(t) = \frac{-15 + \sqrt{993}}{-32} \text{ will be negative}$$

25. $A = 2x^2 + 4xh$

$56 = 2x^2 + 4x(4)$

$56 = 2x^2 + 16x$

$0 = 2x^2 + 16x - 56$

$a = 2$

$b = 16$

$c = -56$

$$x = \frac{-16 \pm \sqrt{16^2 - 4(2)(-56)}}{2(2)} = \frac{-16 \pm \sqrt{704}}{4}$$

$$x = \frac{-16 + \sqrt{704}}{4} \approx 2.63$$

$$x = \frac{-16 - \sqrt{704}}{4} \text{ neg. answer}$$

Approx
2.63 in.

26. $h(t) = -16t^2 + 30t + 5$

$6 = -16t^2 + 30t + 5$

$0 = -16t^2 + 30t - 1$

$a = -16$

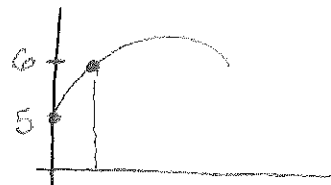
$b = 30$

$c = -1$

$$x = \frac{-30 \pm \sqrt{30^2 - 4(-16)(-1)}}{2(-16)} = \frac{-30 \pm \sqrt{836}}{-32}$$

$$x = \frac{-30 + \sqrt{836}}{-32} \approx .03 \rightarrow .03 \text{ sec is when she catches it}$$

$$x = \frac{-30 - \sqrt{836}}{-32} \approx 1.84$$



$$18. \quad h(t) = -16t^2 + vt + s$$

$$7 = -16t^2 + 20t + 0$$

$$0 = -16t^2 + 20t - 7$$

You only need the discriminant here to determine if there are real solutions.

$$a = -16$$

$$b = 20$$

$$c = -7$$

$$20^2 - 4(-16)(-7)$$

$$400 - 448$$

$$-48$$

No solution, so no she will not make the basket

$$19. \quad h(t) = -16t^2 + 20t + 1$$

$$7 = -16t^2 + 20t + 1$$

$$0 = -16t^2 + 20t - 6$$

The discriminant is:

$$20^2 - 4(-16)(-6) = 16$$

yes, She will make the basket.

$$19. \quad h(t) = -16t^2 + 22t + 4.5$$

$$10 = -16t^2 + 22t + 4.5$$

$$0 = -16t^2 + 22t - 5.5$$

$$a = -16$$

$$b = 22$$

$$c = -5.5$$

Discriminant is

$$22^2 - 4(-16)(-5.5) = 132$$

yes, he will make it over the fence.

$$20. \quad h(t) = -16t^2 + 17t + 5$$

$$10 = -16t^2 + 17t + 5$$

$$0 = -16t^2 + 17t - 5$$

$$a = -16$$

$$b = 17$$

$$c = -5$$

Discriminant is

$$17^2 - 4(-16)(-5) = -31$$

No, he won't make it over the fence.