Algebra 1 ECA Remediation **Name** Answer Key

Homework 38.2

1. A baseball is thrown into the air and its height (h), in feet, can be modeled by the equation $h = -16t^2 + 13t + 3$, where t represents time in seconds.

How many seconds will it take for the baseball to hit the ground (h=0) after it is thrown into the air?

$0 = -16t^2 + 13t + 3$

$0 = -16t^2 - 3t + 16t + 3$

$0 = -t(16t+3) + 1(16t+3)$

$-t + 1 = 0$ $\quad 16t + 3 = 0$

$1 = t$ $\quad -3 \quad -3$

$16t = -3$

$t = -3/16$

Answer $t = 1$

2. Suppose a soccer player kicks a ball and the height (h) of the ball in feet can be modeled by the equation $h = -16t^2 + vt + c$, where t is the time in seconds after the ball is kicked, v is the initial upward velocity, and c is the starting height.

Write an equation that can be used to find the height (h) of the ball after t seconds if the initial upward velocity is 50 ft/sec and the starting height is 3.5 ft.

$v = 50$ ft/sec

$c = 3.5$ ft.

Answer $h = -16t^2 + 50t + 3.5$

If the ball is not touched, how long will it take for the ball to reach the ground?

$t = \frac{-50 \pm \sqrt{50^2 - 4(-16)(3.5)}}{2(-16)}$

$t = \frac{-50 - 52.2}{-32} = \frac{102.2}{32}$

$= 3.2$

Answer $t = 3.2$

3. A woman is going to jump into a pool from a diving board that is 40 ft above the water. Her height (h) above the pool can be modeled by the equation $h = -16t^2 + vt + c$, where t is the time in seconds after the woman jumps, v is the initial upward velocity, and c is her starting height.

Write an equation that can be used to find the height (h) of the woman after t seconds if her initial upward velocity is 4 ft/sec.

$c = 40$

$v = 4$

$a = -16$

$b = 4$

$c = 40$

Answer $h = -16t^2 + 4t + 40$

How many seconds will it take for the woman to hit the water?

$x = \frac{-4 \pm \sqrt{4^2 - 4(-16)(40)}}{2(-16) = -32}$

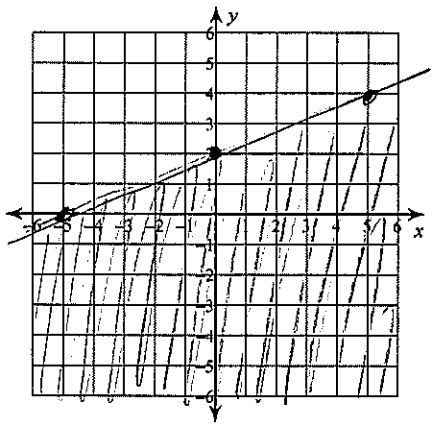
$= \frac{-4 \pm \sqrt{2576}}{-32}$

$\frac{-4 - 50.75}{-32} = 1.7109$

Answer $t = 1.7$ sec

Sketch the graph of each linear inequality.

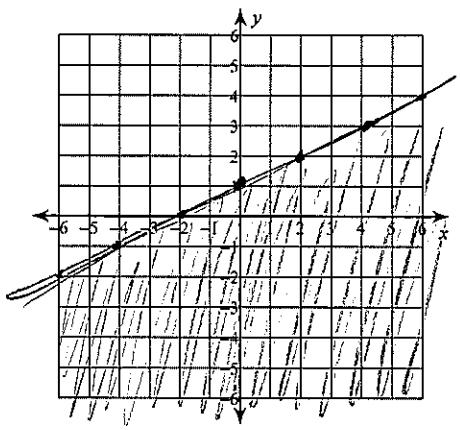
4. $y \leq \frac{2}{5}x + 2$



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

$b = 2$

5. $y \leq \frac{1}{2}x + 1$



$m = \frac{1}{2}$

$b = 1$

Divide.

6. $(20x^4 + 3x^3 + 10x^2) \div 10x^2$

$\frac{20x^4}{10x^2} + \frac{3x^3}{10x^2} + \frac{10x^2}{10x^2}$

$2x^2 + \frac{3x}{10} + 1$

7. $(30k^4 + 30k^3 + 50k^2) \div 10k^2$

$\frac{30k^4}{10k^2} + \frac{30k^3}{10k^2} + \frac{50k^2}{10k^2}$

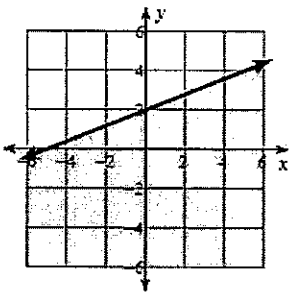
$3k^2 + 3k + 5$

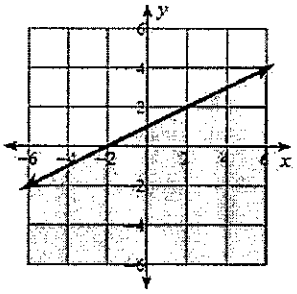
Answers to Homework 38.2

1. 1.0 seconds

2. $h = -16t^2 + 50t + 3.5$; 3.2 seconds

3. $h = -16t^2 + 40t + 4$; 1.7 seconds

4. 

5. 

6. $2x^2 + \frac{3x}{10} + 1$

7. $3k^2 + 3k + 5$