Algebra 2 Bellwork Thursday, November 6, 2014

1. A company manufactures chairs and wants to maximize their revenue. The following equation gives the revenue as a function of the number of chairs produced. $R(c) = -0.48c^2 + 192c - 8775$

a) How many chairs should they produce in order to maximize their revenue?

b) What is the maximum revenue?

2. An object is shot into the air from the ground. The following equation models the height of the object h as a function of the time t it has been in the air. $h(t) = -16t^2 + 120t$
Find the amount of time it will take to reach a height of 200 feet.

3. Find the exact coordinates of the VERTEX for this quadratic function: $y = 3x^2 - 13x + 8$

4. Find the EXACT solutions to this quadratic equation. $3(x+4)^2 - 7 = 68$

Algebra 2 Bellwork Thursday, November 6, 2014 ANSWERS

1. A company manufactures chairs and wants to maximize their revenue. The following equation gives the revenue as a function of the number of chairs produced. $R(c) = -0.48c^2 + 192c - 8775$

FIND THE VERTEX (c, R) → (200, 10,425)

a) How many chairs should they produce in order to maximize their revenue?

c-coord = LOS = $\frac{-192}{2(-.48)} = 200$

200 CHAIRS

b) What is the maximum revenue?

$R(200) = -.48(200)^2 + 192(200) - 8775$

$= \$10,425$

2. An object is shot into the air from the ground. The following equation models the height of the object h as a function of the time t it has been in the air. $h(t) = -16t^2 + 120t$
Find the amount of time it will take to reach a height of 200 feet.

$t = \frac{5}{2}$ sec & 5 sec

$200 = -16t^2 + 120t$

$16t^2 - 120t + 200 = 0$

$8(2t^2 - 15t + 25) = 0$

50, -5, -10, -15

	2t	-5
t	$2t^2$	-5t
-5	-10t	+25

$8(2t-5)(t-5)$

$t = 5/2, 5$

3. Find the exact coordinates of the VERTEX for this quadratic function: $y = 3x^2 - 13x + 8$

LOS $x = \frac{13}{6}$

Vertex $\left(\frac{13}{6}, \frac{-73}{12}\right)$

$3(13/6)^2 - 13(13/6) + 8$

$= 3(169/36) - 169/6 + 8 = \frac{169}{12} - \frac{169}{6} + 8$

$= \frac{169}{12} - \frac{338}{12} + \frac{96}{12}$

$= \frac{-73}{12}$

4. Find the EXACT solutions to this quadratic equation. $3(x+4)^2 - 7 = 68$

$+7 \quad +7$

$\frac{3(x+4)^2}{3} = \frac{75}{3}$

$\sqrt{(x+4)^2} = \sqrt{25}$

$x + 4 = \pm 5$

$+5 - 4 = 1$

$x = +5-4 \quad x = -5-4$

$x = -9, 1$