

Algebra 2 Bellwork Thursday, November 13, 2014

Fill in the blanks to complete the square

1. $x^2 - 8x$ _____ $= (x$ _____ $)^2$

2. $x^2 + 40x$ _____ $= (x$ _____ $)^2$

3. $x^2 - 6x$ _____ $= (x$ _____ $)^2$

4. An object is shot into the air. The following equation gives the height of the object as a function of time since launch.

$$h(t) = -16t^2 + 144t + 65$$

Quadratic Formula just in case you need it: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

a) Find the maximum height of the object and the time it takes to reach that height.

b) Find the time it takes the object to reach a height of 200 feet.

c) Find the time it takes the object to reach the ground.

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ANSWERS

Fill in the blanks to complete the square

1. $x^2 - 8x$ +16 $= (x$ -4 $)^2$

2. $x^2 + 40x$ +400 $= (x$ +20 $)^2$

3. $x^2 - 6x$ +9 $= (x$ -3 $)^2$

4. An object is shot into the air. The following equation gives the height of the object as a function of time since launch.

$$h(t) = -16t^2 + 144t + 65$$

Quadratic Formula just in case you need it: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

a) Find the maximum height of the object and the time it takes to reach that height.

$$\frac{-b}{2a} = \frac{-144}{2(-32)} = 4.5 \quad h(4.5) = 389$$

IN 4.5 sec it will reach a max ht of 389 ft.

b) Find the time it takes the object to reach a height of 200 feet.

$$200 = -16t^2 + 144t + 65$$

$$b^2 - 4ac = 12096$$

$$\frac{-144 \pm \sqrt{12096}}{-32}$$

$$0 = -16t^2 + 144t - 135$$

= 1.06 & 7.94 seconds

c) Find the time it takes the object to reach the ground.

$$0 = -16t^2 + 144t + 65$$

$$\frac{-144 \pm \sqrt{24,896}}{-32}$$

$$b^2 - 4ac = 24,896$$

= -0.43 & 9.43 → 9.43 sec