Practice B

The Quadratic Formula and the Discriminant

Solve using the quadratic formula.   Check your answers.

1. $x^2 + 6x + 5 = 0$

2. $4x^2 - 17x - 15 = 0$

3. $2x^2 - 5x = 3$

4. $3x^2 + 14x - 5 = 0$

5. $x^2 - 3x - 18 = 0$

6. $2x^2 + 9x + 4 = 0$

Find the number of real solutions of each equation using the discriminant. (Pg 3 notes)

9. $x^2 + 25 = 0$

10. $2x^2 - 11x + 28 = 0$

11. $x^2 + 8x + 16 = 0$

Factor using any method.   Think about if both answers make sense, there may be just one solution.

1.   For a scene in a movie, a sack of money drops from the roof of a 600-foot skyscraper.   The height of the sack above the ground is given by the equation $h = -16t^2 + 600$ where t is the time in seconds.   How long will it take the sack to reach the ground?   Round to the nearest tenth of a second.

2.   A baseball coach uses a pitching machine to simulate pop flies during practice. The quadratic function $f(x) = -16x^2 + 80x$ models the height of the baseball after x seconds.   How long is the baseball in the air?

3.   Yosemite Falls in California is made of three smaller falls. The upper fall drops 1450 feet. The height h in feet of a water droplet falling from the upper fall to the next fall is modeled by the equation $h(t) = -16t^2 + 1450$, where t is the time in seconds after the initial fall. Estimate the time it takes for the droplet to reach the next cascade.

4.   A dolphin jumps out of the water. The quadratic function f(x)= $-16x^2 + 32x$ Models the dophin's height above the water after x seconds.   How long is the dolphin out of the water?   Solve using factoring or the quadratic formula.

5. The height of a rocket launched upward from a 160-foot cliff is given by the equation $h = -16t^2 + 48t + 160$, where t is the time in seconds.   After the rocket is fired, how long will it take to reach the ground at the bottom of the cliff?   Solve using factoring or the quadratic formula.

6.   A diver begins on a platform 10 meters above the surface of the water. The diver's height is given by the equation $h(t) = -14.9t^2 + 3.5t + 10$ where t is the time in seconds after the diver jumps.   How long does it take the diver to break the surface of the water?

-1.11 seconds and 1.83 seconds   Which solution to this situation makes sense? Explain.