**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Factoring and Solving Quadratic Equations**

**Factor each polynomial, and then find the solutions assuming each is equal to zero. Show your work. (10 problems)**

1. $x^{2}+8x+7$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
2. $x^{2}+5x+6$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
3. $x^{2}+11x+24$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
4. $x^{2}-6x+8$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
5. $x^{2}-13x+36$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
6. $4x^{2}+4x-48$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
7. $-3x^{2}+9x+54$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
8. $2x^{2}-22x+36$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
9. $-5x^{2}+40x+100$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
10. $x^{2}-36$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_
11. $x^{2}-81$ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeros: \_\_\_\_\_\_\_\_

**Use the problem below to answer the question.**

Jason jumped off of a cliff into the ocean in Acapulco while vacationing with some friends. His height as a function of time could be modeled by the function

 $h(t) = -16t^{2} + 16t + 480$, where t is the time in seconds and h is the height in feet.

1. How high was Jason after 3 seconds?
2. How high was Jason after 6 seconds?
3. How high was Jason before his jump?
4. Find the vertex of the given equation.
5. What does the vertex mean in the context of the problem?