**Factor each expression completely.**

 1. x2 + 2x – 35 2. x2 – 10x + 16 3. 4x2 – 25 4. $2x^{2}+4x-6$

4. Graph g(x) = $(x-4)^{2} + 1$ by finding the vertex and y-intercept, then plotting those two points and a

 mirror image.

 Vertex:\_\_\_\_\_\_\_\_ y-int:\_\_\_\_\_

5. Find the zeros of the function by factoring: f(x) = 5x2 + 10x

6. Find the zeros of the function by graphing: f(x) = – x2 – 4x + 10

7. Solve the equation using square roots: (x – 1)2 + 3 = 14

8. Find the roots of: x2 + 8x + 20 = 0

**Solve using any method.**

9. 2x2 – 16x + 32 = 0 10. x2 – 6x = 11 11. x2 + 3x +1 = 0 12. 3x2 + 7 = – 5

13. For f(x) = x2 – 2x – 8, find the following and graph the function.

a) direction of opening\_\_\_\_\_\_\_ b) AOS \_\_\_\_\_\_\_\_\_\_\_\_

c) vertex \_\_\_\_\_\_ d) max/min & what is it?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) y-intercept\_\_\_\_\_\_\_\_\_ f) x-intercepts(zeroes)\_\_\_\_\_\_\_\_\_\_\_\_\_\_

g) vertex form\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. The path of a soccer ball is modeled by the function h(x) = -0.005x2 + 0.25x, where h is the height of

 the ball in meters and x is the horizontal distance in feet that the ball travels in meters. What is the

 maximum height that the ball reaches?

15. A company has determined that their per-item profit, P, can by modeled by the function

 P(x) = – 12x2 + 47x – 40, where x is the selling cost.

 a) What is the maximum profit that the company will make per item?

 b) How much profit would the company make if the items were sold for $1.50?

 c) How much did they sell the items for if they had a profit of $4 per item?