

## Quadratic Equations 2.1

### Algebra 2

1) What is a y-intercept? What is the first step in finding one? Why?

2) What is an x-intercept? What is the first step in finding one? Why?

3) What is a root in the context of graphing equations?

4) What does the zero-product property say?

Identify the quadratic, linear, and constant terms.

Give the values of a, b, and c.

5)  $y = 5x^2 - 11x + 4$

6)  $f(x) = 6x^2 + 7x$

7)  $q(x) = (3x + 4)(x - 1)$     8)  $y = 4x + 10$

Use the zero-product property to find the x-intercepts. Graph with the vertex and intercepts.

9)  $f(x) = x^2 - x - 12$

10)  $d = c^2 + 7c + 10$

Use the zero-product property to find the zeroes of the functions. Graph with the vertex and intercepts.

11)  $p(x) = x^2 - 6x$

12)  $k(x) = x^2 - 16$

Use the zero-product property to find the roots of the functions. Graph with the vertex and intercepts.

13)  $t(x) = 2r^2 - 3r - 9$

14)  $v(x) = x^2 - 10x + 25$

Factor the following polynomials.

15)  $x^2 + 6x + 9$

16)  $x^2 - 18x + 81$

17)  $q^2 + 2q + 1$

18)  $d^2 - 14d + 49$

Find the value of  $c$  that will make the following polynomials a perfect square.

19)  $x^2 + 12x + c$

20)  $p^2 + 10p + c$

21)  $q^2 - 8q + c$

22)  $k^2 - 20k + c$

Graph the following equations by doing the following:

- Complete the square to put the equations in standard form and find the vertex of each parabola.

- Set  $y$  equal to zero, and solve for  $x$  to find the roots.

23)  $f(x) = x^2 + 6x$

24)  $y = x^2 + 4x - 5$

25)  $y = x^2 - 6x - 16$

26)  $y = x^2 + 14x + 24$

27)  $f(c) = c^2 + 12c + 20$

28)  $f(x) = x^2 + 18x + 72$

Solve using the zero-product property.

29)  $0 = v^2 + 3v$

30)  $0 = 3t^2 + 11t - 4$

Solve by completing the square.

31)  $0 = c^2 + 6c + 5$

32)  $0 = w^2 + 8w$