

## Algebra 1 Review of Parabola and Zeros

1. Graph:  $y = x^2 - 2x - 3$

x	y
-3	
-2	
-2	
0	
1	
2	
3	

2. Graph  $y = x^2 + 4x - 12$

Find the vertex, y-intercept, x-intercepts and axis of symmetry.

3. Does the graph of  $y = -3x^2 + 2$  face upwards or downwards? Does it have a minimum or maximum point? Is it wider or narrower than the parent graph? Explain all of your answers!!

4. Graph:  $y > 4x^2 - 8x + 1$

5. What are the other three ways to describe the x-intercepts of a quadratic?

Find the zeros of each by **factoring**:

6)  $x^2 - 7x + 18 = 0$

7)  $n^2 - 5n = 36$

8)  $w^2 - 49 = -14w$

9)  $4h^2 - 121 = 0$

10)  $8x^2 = -10x + 3$

11)  $4x^2 + 3x = 2x^2 - 2x - 3$

Find the value of  $n$  such that each expression is a perfect square trinomial.

12)  $r^2 - 8r + n$

13)  $d^2 + 26d + n$

Find the x-intercepts by **completing the square**.

14)  $x^2 - 4x - 21 = 0$

15)  $x^2 - 3x = 10$

Find the solutions by using the **quadratic formula**:

16)  $x^2 - 7x - 8 = 0$

17)  $4x^2 - 3x = 5$

Find the roots of each using any method you choose.

18)  $5x^2 - 10x = 0$

19)  $5x^2 - 5x = 6$

20)  $-x^2 + 6x + 4 = 0$

Find the number of solutions **and** the type of solutions:

21)  $x^2 - 3x - 2 = 0$

22)  $c^2 + 36 = +12c$

23)  $x^2 - 2x + 10 = 0$

**Review (Chapters 1-8):**

Factor:

24)  $5n^2 - 33n - 14$

25)  $225g^2 - 169$

26)  $36x^2 - 60x + 25$

27)  $15x^3 - 50x^2 - 40x$

Solve the system

28) 
$$\begin{aligned} 3x + 2y &= 1 \\ 4x + 5y &= -1 \end{aligned}$$

29) 
$$\begin{aligned} y &= 3x - 2 \\ 2x - 3y &= 13 \end{aligned}$$

30) 
$$\begin{aligned} y &> -2x + 5 \\ 3x - 2y &= 6 \end{aligned}$$

31) Write the equation of a line with a slope of 5 and passes through the point (-3, -2).

32) Solve  $3(2x - 8) - (x - 2) = 6(4 - 3x)$

33) Simplify: a)  $(5x - 7)^2$

b)  $(3x^2 - 5)(4x^3 + 5x)$

c)  $\frac{20x^8 y^4}{16xy^{10}}$