

## Understanding the Discriminant

Date\_\_\_\_\_ Period\_\_\_\_

**Find the value of the discriminant of each quadratic equation.**

1)  $6p^2 - 2p - 3 = 0$

2)  $-2x^2 - x - 1 = 0$

3)  $-4m^2 - 4m + 5 = 0$

4)  $5b^2 + b - 2 = 0$

5)  $r^2 + 5r + 2 = 0$

6)  $2p^2 + 5p - 4 = 0$

**Find the discriminant of each quadratic equation then state the number of real and imaginary solutions.**

7)  $9n^2 - 3n - 8 = -10$

8)  $-2x^2 - 8x - 14 = -6$

9)  $9m^2 + 6m + 6 = 5$

10)  $4a^2 = 8a - 4$

11)  $-9b^2 = -8b + 8$

12)  $-x^2 - 9 = 6x$

13)  $-4r^2 - 4r = 6$

14)  $8b^2 - 6b + 3 = 5b^2$

**Find the discriminant then state the number of rational, irrational, and imaginary solutions.**

15)  $-6x^2 - 6 = -7x - 9$

16)  $4k^2 + 5k + 4 = -3k$

17)  $-7n^2 + 16n = 8n$

18)  $2x^2 = 10x + 5$

19)  $-10n^2 - 3n - 9 = -2n$

20)  $-9r^2 - 8r - 1 = r - r^2 - 9$

21)  $-3p^2 + 10p + 5 = -8p^2$

22)  $m^2 + 5m = 2m^2$

**Critical thinking questions:**

23) Write a quadratic equation that has two imaginary solutions.

24) In your own words explain why a quadratic equation can't have one imaginary solution.

## Using the Quadratic Formula

Solve each equation with the quadratic formula.

1)  $v^2 + 2v - 8 = 0$

2)  $k^2 + 5k - 6 = 0$

3)  $2v^2 - 5v + 3 = 0$

4)  $2a^2 - a - 13 = 2$

5)  $2n^2 - n - 4 = 2$

6)  $b^2 - 4b - 14 = -2$

7)  $8n^2 - 4n = 18$

8)  $8a^2 + 6a = -5$

9)  $10x^2 + 9 = x$

10)  $n^2 = 9n - 20$

11)  $3a^2 = 6a - 3$

12)  $x^2 = -3x + 40$

13)  $9x^2 - 11 = 6x$

14)  $4a^2 - 8 = a$

15)  $14m^2 + 1 = 6m^2 + 7m$

16)  $4x^2 + 4x - 8 = 1$

