Name_____

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 numberof 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.

Name_____

Understanding the Discriminant

Date_____ Period____

Find the value of the discriminant of each quadratic equation.

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

   76

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

   -7

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

   96

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

   41

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

   17

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

   57

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

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

   -63; two imaginary solutions

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

   0; one real solution

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

   0; one real solution

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

   0; one real solution

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

   -224; two imaginary solutions

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

   0; one real solution

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

    −80; two imaginary solutions

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

    0; one real solution

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

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

    121; two rational solutions

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

    0; one rational solution

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

    64; two rational solutions

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

    140; two irrational solutions

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

    −359; two imaginary solutions

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

    337; two irrational solutions

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

    0; one rational solution

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

    25; two rational solutions

Critical thinking questions:

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

    Many answers. Ex: $x^2 + x + 1 = 0$

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

    Answers vary.

Create your own worksheets like this one with **Infinite Algebra 2**. Free trial available at KutaSoftware.com