

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) $14a^2 - a = 5a^2 - 5a$

16) $12v^2 - 6v + 1 = 3v^2$

17) $3m^2 - 5m = -8m + 2$

18) $6n^2 + n - 3 = 7 + 2n$

19) $6r^2 - 8r + 6 = 4r^2 - 2$

20) $-x^2 - 2x - 7 = -6$

Critical thinking questions:

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

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

Understanding the Discriminant

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) $14a^2 - a = 5a^2 - 5a$

16; two rational solutions

16) $12v^2 - 6v + 1 = 3v^2$

0; one rational solution

17) $3m^2 - 5m = -8m + 2$

33; two irrational solutions

18) $6n^2 + n - 3 = 7 + 2n$

241; two irrational solutions

19) $6r^2 - 8r + 6 = 4r^2 - 2$

0; one rational solution

20) $-x^2 - 2x - 7 = -6$

0; one rational solution

Critical thinking questions:

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

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

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

Answers vary.