

Name _____
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Date _____
Pre-Calculus

Nature of the Roots

For each of the following, find the discriminant, the nature of the roots, and the number of x-intercepts.

1. $x^2 - 5x + 1 = 0$

2. $x^2 - 3x - 10 = 0$

3. $2x^2 - 5x = -6$

4. $x^2 + 9 = 6x$

5. If the discriminant of a quadratic equation is 47, what is the nature of the roots?

- 1) real, rational, and equal
- 2) real, rational, and unequal
- 3) real, irrational, and unequal
- 4) imaginary

6. If the discriminant of a quadratic equation is -8, what is the nature of the roots?

- 1) real, rational, and equal
- 2) real, rational, and unequal
- 3) real, irrational, and unequal
- 4) imaginary

7. If the discriminant of a quadratic equation is 0, what is the nature of the roots?

- 1) real, rational, and equal
- 2) real, rational, and unequal
- 3) real, irrational, and unequal
- 4) imaginary

8. The nature of the roots of $3x^2 + 9x = -27$ are:

- 1) real, rational, and equal
- 2) real, rational, and unequal
- 3) real, irrational, and unequal
- 4) imaginary

9. The nature of the roots of $-2x^2 + x = 6$ are:

- 1) real, rational, and equal
- 2) real, rational, and unequal
- 3) real, irrational, and unequal
- 4) imaginary

10. The nature of the roots of $2x^2 = 3x + 1$ are:

- 1) real, rational, and equal
- 2) real, rational, and unequal
- 3) real, irrational, and unequal
- 4) imaginary

11. Which number is the discriminant of a quadratic equation whose roots are real, unequal, and irrational?

- 1) 0
- 2) -5
- 3) 7
- 4) 4

12. Which graph represents a quadratic function with a negative discriminant?

