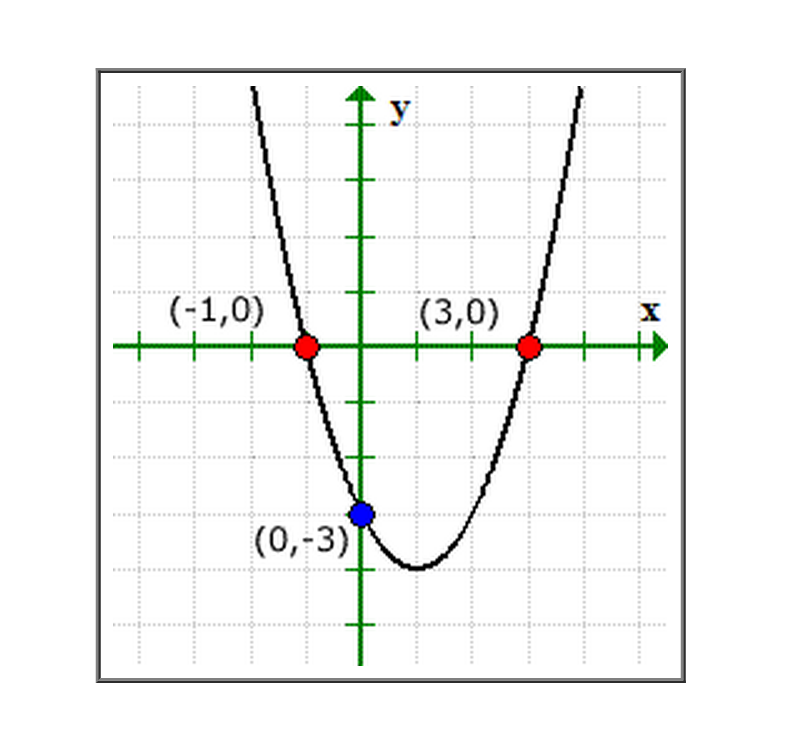
**Chapter 1: Equations and Inequalities**

1.8 🡪 Other Types of Inequalities

To solve a polynomial inequality such as you can use the fact that a polynomial can change signs only at its zeros (x-values that make the polynomial = to zero).

Between two consecutive zeroes a polynomial must be entirely positive or entirely negative. These zeros are the **critical numbers** of the inequality, and the resulting intervals are the **test intervals** for the inequality.

The polynomial above has two zeros, and , and these zeros divide the real number line into three test intervals:

3

-1

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SOLVING A POLYNOMIAL INEQUALITY

1. Standard Form

( )( ) = 0 Factor

Critical Numbers

Test

Interval Notation

2. 3.

4. 5.

6. 7.

SOLVING RATIONAL INEQUALITIES

The concepts of critical numbers and test intervals can be extended to rational inequalities.

The value of a rational expression can change sign only at its ***zeros*** (the x-values for which its numerator is zero) and its ***undefined values*** (the x-values for which its denominator is zero).

These two types of numbers make up the **critical numbers** of a rational inequality.

8. 9.

10. 11.