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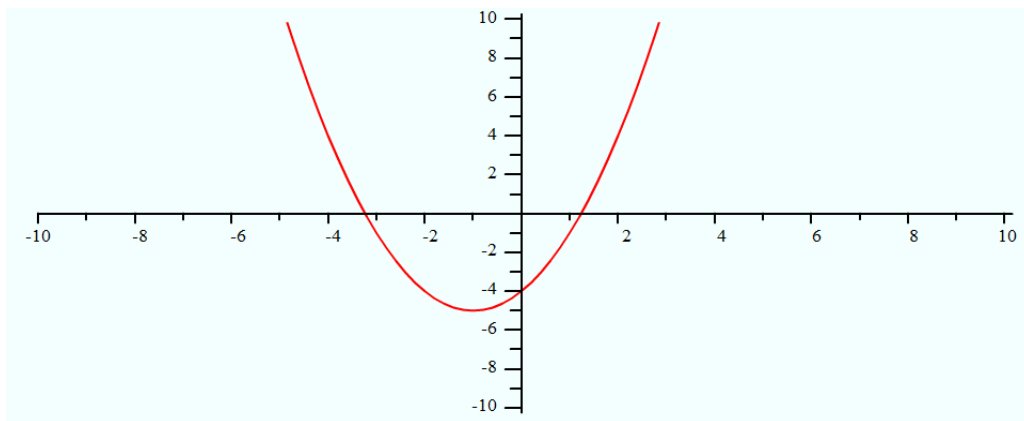
Graphing Polynomial Functions - Step-by-Step Lesson

Given the following function: $x^2 + 2x - 4$

- Sketch a graph of this function.
- What is the maximum number of turns a graph of this function could make?
- List all the possible real zeros.

Explanation:

- We start by graphing the equation to give us a visual.



- The maximum number of turns depends on the degree (n) of the polynomial function.** The degree is the power of the highest power term. Polynomial functions have the maximum number of turns equal to $n - 1$. Since our highest degree is found in x^2 , our highest degree is equal to 2. Maximum number of turns = $2 - 1 = 1$ turn



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c. Use the Rational Zero Theorem to list all the real zeros.

$\frac{p}{q}$ where

p = factors of the constant

q = the factors of the leading coefficient.

$$x^2 + 2x - 4$$

Step 1) List all the possible factors of the constant. The constant is: - 4

$\pm 1, \pm 2, \pm 4$

Step 2) List all the factors of the leading coefficient.

± 1

Step 3) List all the possible rational zeros. $\frac{p}{q}$

± 1 , ± 2 , ± 4

1 1 1 or 1, 2, 4

Note: This can be tested further by testing the values against the graph. The core standards do not require that skill.

