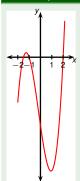
## **Precalculus**

## § Factor cubic with rational roots using its plot

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## Example



Plot the left hand side of the equation with a graphing calculator. Solve the equation.

$$2x^3 + x^2 - 7x - 6 = 0$$
  
 $(2x+3)(x+1)(x-2) = 0$   
 $x = -\frac{3}{2}$  or  $x = -1$  or  $x = 2$ 

Make sure to practice with the graphing calculator you will on your exam(s). The graph appears to intersect the x axis at: -1.5, -1, 2. The left hand side should factor as:

$$2(x - (-1.5))(x - (-1))(x - 2) = (2x + 3)(x + 1)(x - 2)$$

$$= (2x^{2} + 5x + 3)(x - 2) = (2x^{3} + 5x^{2} + 3x) - (4x^{2} + 10x + 6)$$

$$= 2x^{3} + x^{2} - 7x - 6$$

Check work to make sure we guessed the roots correctly.