

## Unit 1: Introduction to Polynomial Functions

### Activity 7: Introduction to inequalities

This Worksheet May be done with technology:

**Free Graphing technology** If you do not currently have graphing software installed on your computer, please take the time to install some:

**GeoGebra:** <http://www.geogebra.org/cms/en/download>

**GraphCalc:** <http://www.graphcalc.com/download.shtml>



#### Assignment 1: Homework/Formative Assignment

*Note to Students: This is a formative assignment. It is not to be submitted. Mark it yourself, using the answers provided, and contact your instructor for assistance if needed.*

Solve each of the following Polynomial Inequalities, using graphing technology, such as GeoGebra or GraphCalc:

1.  $39x + 20 > 2x^3 - 3x^2$
2.  $x^3 + 4x + 12 \leq 9x^2$

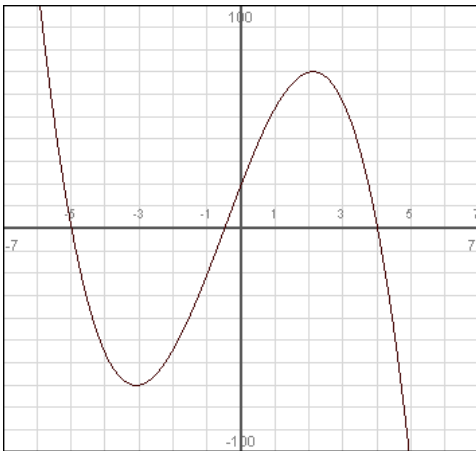
# Assignment: Homework/Formative Assignment - SOLUTIONS

1.  $39x + 20 > 2x^3 + 3x^2$

Rearranging:

$$-2x^3 - 3x^2 + 39x + 20 > 0$$

Graph of  $f(x) = -2x^3 - 3x^2 + 39x + 20$ :



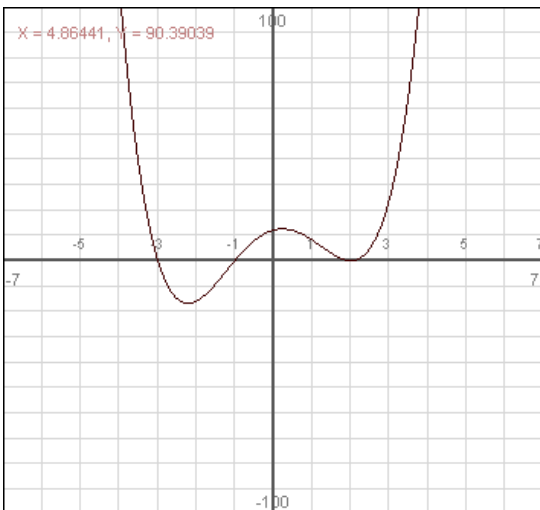
Based on the graph,  $f(x) > 0$  for  $x < -5$  and  $-0.5 < x < 4$ .

2.  $x^4 + 4x + 12 \leq 9x^2$

Rearranging:

$$x^4 - 9x^2 + 4x + 12 \leq 0$$

Graph of  $f(x) = x^4 - 9x^2 + 4x + 12$ :



Based on the graph,  $f(x) \leq 0$  for  $-3 \leq x \leq -1$  and  $x = 2$