



POLYNOMIAL INEQUALITIES WORKSHEET

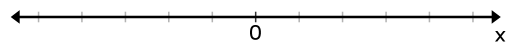
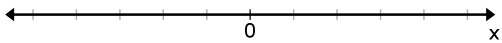
We have two methods for solving polynomial inequalities:

- *Find the zeros (factor if necessary) and use a sign chart. Plot the zeros on a number line and do a sign analysis by picking a point in each of the regions divided by the zeros of the function to see which regions satisfy the inequality.*
- *Use a graphing calculator and analyze the graph. Use the ZERO function to find the approximate values of zeros.*

Solve and graph the solution of the following polynomial inequalities.

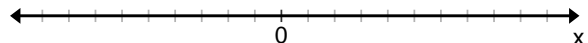
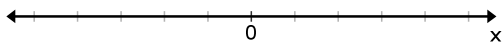
1) $x^3 - 2x = 0$

2) $x^3 + 3x^2 + x + 3 \leq 0$



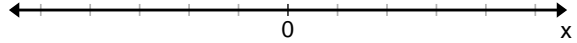
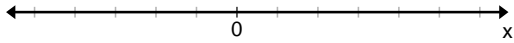
3) $x^3 \geq x^2$

4) $(x+4)(x-2)(x-7) > 0$



5) $(x-5)^2(x-1)(x+3) \leq 0$

6) $x^3 - x^2 < 9x - 9$



Using technology, graph the following polynomials to find the solutions. Use the ZERO feature on the calculator to estimate the zeros on 9 – 12.

7) $y < x^3 + 4x^2 - x - 4$

8) $y \geq x^4 - 10x^2 + 9$

9) $y \leq 3x^4 - 11x^3 + 10x - 4$

10) $y > 2x^3 + x^2 - 5x - 2$

11) $y < -2x^4 + x^2 - 5$

12) $y \geq 2x^4 - 7x^2 + 4$