

Advanced Precalculus
HW: Polynomial Inequalities

Name: _____

In Problems 1 – 5, solve each polynomial inequality, writing your answer in interval notation.

1.) $x^4 + x^2 + 3x > 3x^3 + 2$

2.) $36x^4 + 1 < 13x^2$

3.) $4x^5 + 27x^4 + 65x^3 + 62x^2 + 12x \geq 8$

4.) $3x^5 + 11x^3 + 30 < x^4 + x^2 + 42x$

5.) $12x^9 + 13x^8 - 36x^7 - 40x^6 + 36x^5 + 42x^4 - 12x^3 - 16x^2 + 1 > 0$

In Problems 6 – 7, solve for all complex solutions to the equation given one of its solutions.

6.) $x^7 + 3x^6 + 37x^2 + 7x = 7x^5 + 26x^4 + x^3 + 14$ given that $x = \sqrt{7}$ is a solution.

7.) $x^6 = 4x^4 + 6x^3 + 7x^2 + 6x + 2$ given that $x = i$ is a solution.