

I. Write the simplest polynomial function (in standard form) with the following zeros.

1. $3i$ and -5

II. Solve each equation by finding all the roots (EXACT VALUE). Use the calculator to help you.

2. $x^3 - 7x^2 + 15x - 9 = 0$

3. $14x^4 - 43x^3 + 14x^2 + 15x = 0$ **CAREFUL! GCF!**

4. $x^4 - 3x^3 + 5x^2 = 27x + 36$

III. Graphing Calculator.

5. Consider the polynomial function $f(x) = x^4 + 3x^3 + 12x - 16$.

(a) Use the Rational Root Theorem to list the possible rational roots of this equation.

(b) Graph the polynomial on a graphing calculator. Which possible rational roots are zeros of $f(x)$? How do you know?

(c) According to the graph, how many other real zeros does the function have?

(d) How many imaginary zeros does the function have?

(e) Find the imaginary zeros. SHOW YOUR WORK.