

MAT 121 Test 3 Take-Home

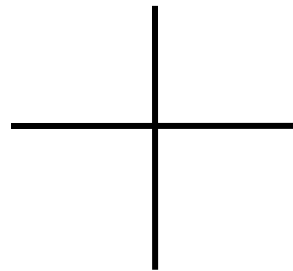
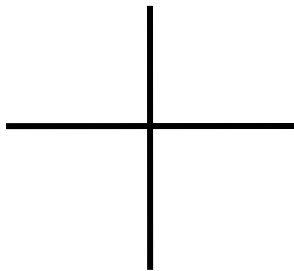
Bring this Test with you when you take your sit-down test. Deadline, Monday, October 22nd.

1. What is a zero of a polynomial? What is the difference between a real zero and a complex zero? What does this mean with respect to the graph?

2. For each of the following polynomials draw the end behaviors on the graph.

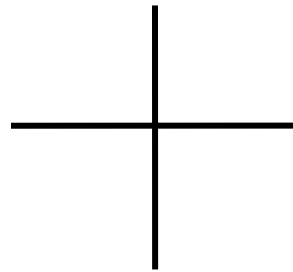
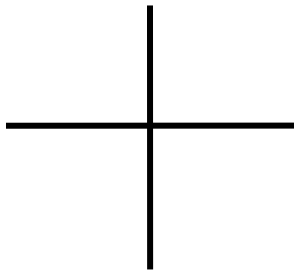
a. $f(x) = -4x^5 - 3x^4 + 2x + 7$

b. $g(x) = 3x^4 - 5x^2 + 7x - 2$



c. $h(x) = 4x^3 + 2x^2 - 8x + 1$

d. $p(x) = -2x^6 + 5x^4 - 4x^3 + 2x - 5$



Name _____

For problems 3 through 10: Given the polynomial

$$f(x) = x^5 - 3x^4 - 4x^3 + 28x^2 - 37x + 15.$$

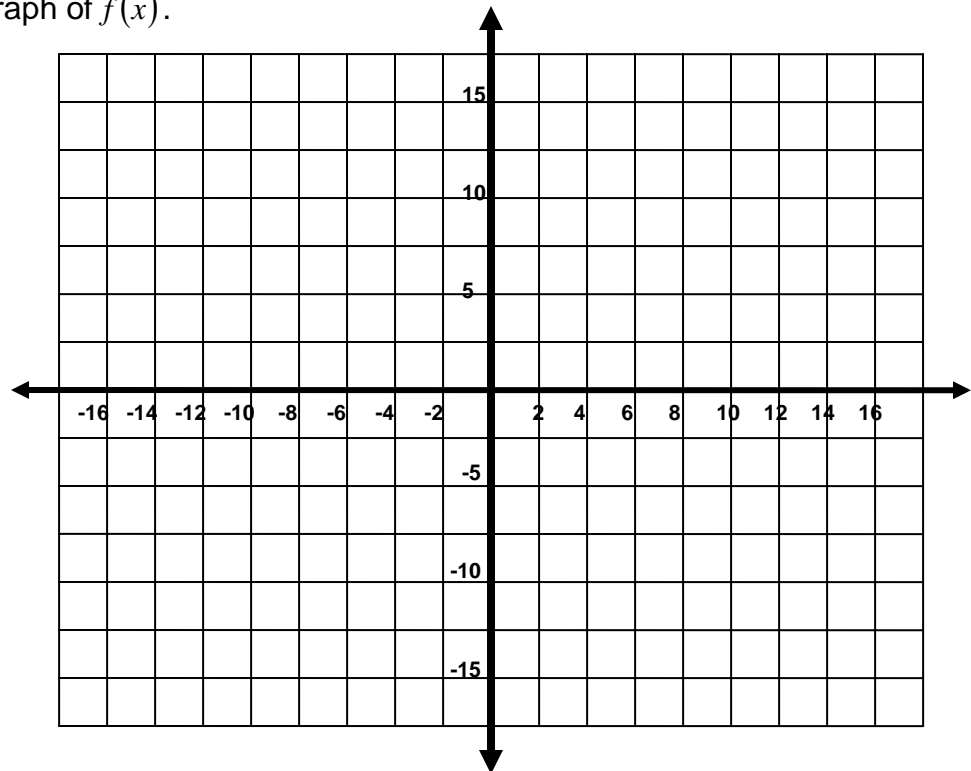
3. What does Descartes Rule of Signs tell you about the zeros of this function?

4. Use the Rational Zero (Root) Theorem to list the possible rational zeros.

5. Find all real and complex zeros of $f(x)$ (Show **all** work on separate sheet of paper. It must be attached to this test to receive credit.) List the zeros here.

6. How do you find the y intercept and what is it?

7. Sketch the graph of $f(x)$.



8. Discuss how your graph supports the conclusions from questions 2 through 6.

9. Use other methods to further verify your graphical results.

10. Write $f(x)$ in factored form. (Factor over either the real numbers or complex numbers.)