Algebra/Trigonometry Section 3.4c Name:_____

Please do all your work on a separate piece of paper. Please show all setup and work!

1. $f(x) = x^3 - 2x^2 - 21x - 18$

   All Possible Rational Zeros:
   # of possible positive zeros:
   # of possible negative zeros:
   Find all the real zeros:

2. $f(x) = x^3 - 10x^2 + 17x - 8$

   All Possible Rational Zeros:
   # of possible positive zeros:
   # of possible negative zeros:
   Find all the real zeros:

3. $f(x) = x^4 + x^3 - 11x^2 + x - 12$

   All Possible Rational Zeros:
   # of possible positive zeros:
   # of possible negative zeros:
   Find all the real zeros:

4. $f(x) = 4x^3 - 11x^2 + 10x - 3$

   All Possible Rational Zeros:
   # of possible positive zeros:
   # of possible negative zeros:
   Find all the real zeros:

5. $f(x) = 6x^4 - 25x^3 + 14x^2 + 27x - 18$

   All Possible Rational Zeros:
   # of possible positive zeros:
   # of possible negative zeros:
   Find all the real zeros:

6. Write a polynomial function of n degree with the following zeros.
   $n = 3$, zeros = $1, -2, 5$

7. Write a polynomial function of n degree with the following zeros.
   $n = 4$, zeros = $6, -3, 2i$

8. Write a polynomial function of n degree with the following zeros.
   $n = 4$, zeros = $-4, -7, 1 + \sqrt{3}i$

9. Use the given zero $(-1 - 3i)$ to find all zeros of the function: $f(x) = x^3 + 4x^2 + 14x + 20$

10. Use the information in the table:

Interval	Value of $f(x)$
$(-\infty, -2)$	Negative
$(-2, 0)$	Positive
$(0, 2)$	Positive
$(2, \infty)$	Negative

    a. What are the three zeros of the function?
    b. What can be said about the behavior of the graph at $f(0)$?
    c. What is the least possible degree of f? Can the degree ever be odd? Explain.
    d. Is the lead coefficient positive or negative? Explain.
    e. Write an equation for f.