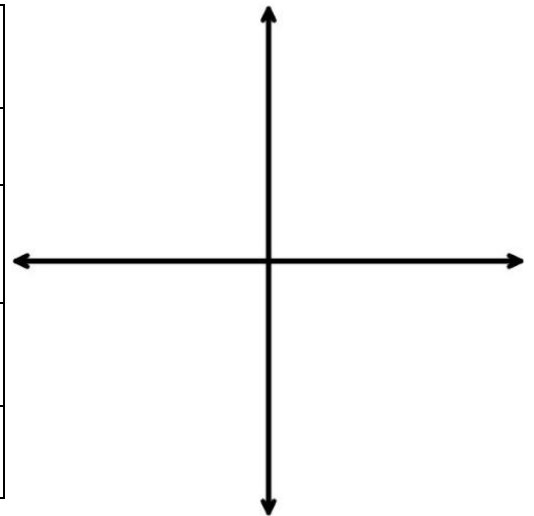


Name: _____

Date: _____

1. Graph $f(x) = -x^4 - x^3 + 4x^2 - 5$ and find the characteristics. Label zeros and extrema to 2 decimals.

Increasing:	Decreasing:
x-intercepts:	y-intercept:
Rel. Max:	Rel. Min:
Abs. Max:	Abs. Min:
Symmetry:	Range:



2. Determine the end behavior, maximum number of extrema, and possible rational solutions

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

$g(x) = 2x^4 - 4x^2 + 6x^5 - x + 6$

$x \rightarrow ___ f(x) \rightarrow ___ \quad \text{extrema } ___$

$x \rightarrow ___ f(x) \rightarrow ___ \quad \text{extrema } ___$

$x \rightarrow ___ f(x) \rightarrow ___$

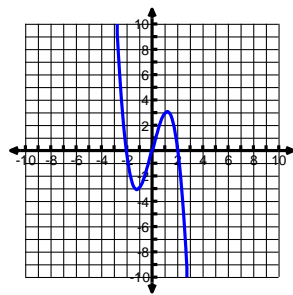
$x \rightarrow ___ f(x) \rightarrow ___$

Possible Rational Solutions :

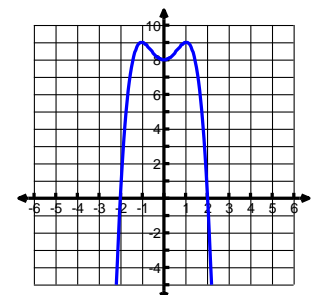
Possible Rational Solutions :

3. State the sign of the leading coefficient, whether the degree is even or odd, and least possible degree.

a)



b)



4. Describe the Symmetry

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

$g(x) = 3x^4 - 2x^2 + 1$

$h(x) = x^5 - 3x^3$

5. **True or False**

The range of a quartic function is always $(-\infty, \infty)$ _____

Odd Degree Polynomials have an Absolute Max or Absolute Min _____

A Quadratic function with a negative leading coefficient will have an Absolute Max _____

A Cubic Function will have 3 extrema _____

6. Verify if $(x + 3)$ is a factor of
 $f(x) = x^4 + 9x^2 + 18$

7. Determine all the **x-intercepts** of
 $f(x) = x(x - 3)(2x - 5)$

8. Given the zeros, $x = -3$ and $1 + 2i$
a. What are the factors of the polynomial?

b. Write the equation of the polynomial.

9. Given the zeros, $x = 0, -4, \sqrt{3}$
a. What are the factors of the polynomial?

b. Write the equation of the polynomial.

If $f(x)$ = some polynomial, and $f(3) = 0$ and $f(0) = -1$

10. What is the y – intercept?

11. What is a factor we know?

Find all the indicated zeros, roots, solutions, or factors:

12. $f(x) = 8x^3 - 125$

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

Zeros: _____

Factors: _____

14. $f(x) = x^3 - 7x^2 + 16x - 12$

Factors: _____

15. $f(x) = 3x^3 - 11x^2 - 9x + 50$

Roots: _____

16. $f(x) = x^4 - x^3 + x^2 - 7x - 42$

Solutions: _____

17. $f(x) = 2x^4 + 3x^3 - 30x^2 - 15x + 100$

x-intercepts: _____

18. $f(x) = x^3 + 9x^2 + 3x - 13$

Roots: _____

19. $f(x) = x^4 - 6x^3 - 3x^2 - 24x - 28$

Factors: _____