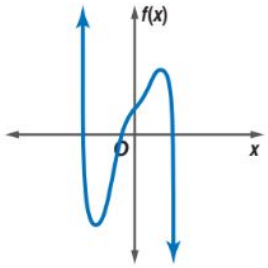
Review Chapter 5.3 and 5.6-5.8
Honors Algebra 2

1. Describe the end behavior of the graph. Then determine whether it represents an odd-degree or an even-degree polynomial function and state the number of real zeros.



End Behavior:

$x \to \infty,\ f(x) \to$ _____

$x \to -\infty,\ f(x) \to$ _____

Degree: _____

Number of real zeros: _____

2. Find $3f(a-4) - 2h(a)$ if $f(x) = x^2 + 3x$ and $h(x) = 2x^2 - 3x + 5$

3. Describe each of the following end behaviors in words and with a sketch.

	Word Description:	**Sketch:**
1. Positive Even Function:	_____	
2. Positive Odd Function:	_____	
3. Negative Even Function:	_____	
4. Negative Odd Function:	_____	

4. Write in standard form: $f(x) = 3x - 5 + x^3 - 2x^2$. What is the degree and leading coefficient of the polynomial? What is the end behavior of the polynomial?

Standard form:

_____

Degree: _____

Leading Coefficient: _____

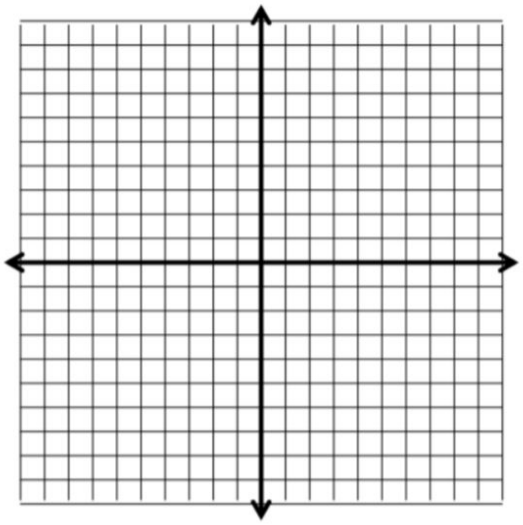
End Behavior:

$x \to \infty$, $f(x) \to$ _____

$x \to -\infty$, $f(x) \to$ _____

5. Graph the following functions. After the function is graphed, determine the domain and range. Label all zeros and y-intercepts clearly.

   a. $f(x) = (x + 1)(x - 2)^2$



Degree: _____

Sign of the Leading Coefficient: _____

Y-intercept: _____

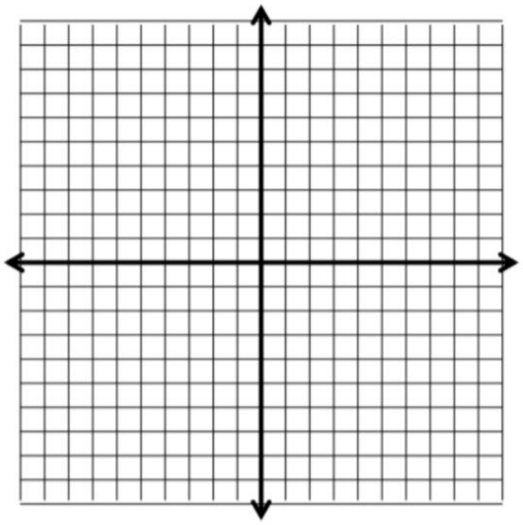
Zeros: _____

Multiplicity of zeros: _____

Domain: _____

Range: _____

b. $f(x) = -(x-4)(x+3)$



Degree: _____

Sign of the Leading Coefficient: _____

Y-intercept: _____

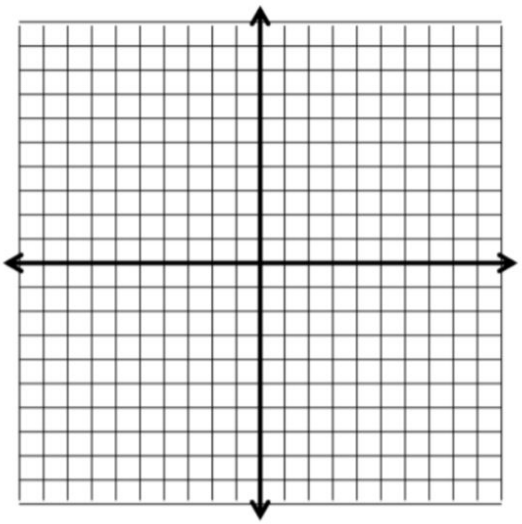
Zeros: _____

Multiplicity of zeros: _____

Domain: _____

Range: _____

c. $f(x) = (x-1)(x^2-16)$



Degree: _____

Sign of the Leading Coefficient: _____

Y-intercept: _____

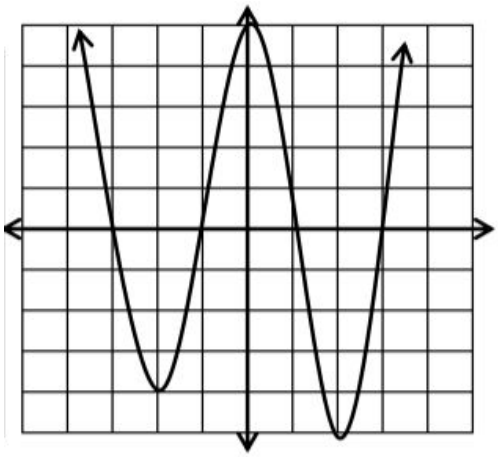
Zeros: _____

Multiplicity of zeros: _____

Domain: _____

Range: _____

6. Determine the zeros, maxima, minima, smallest possible degree, domain, and range of the function below:



Zeros: _____

Maxima: _____

Minima: _____

Smallest Possible Degree: _____

Domain: _____

Range: _____

7. Factor $3x^3 - 4x^2 - 28x - 16$ completely given $x + 2$ is a factor.

8. Factor $3x^3 - 16x^2 + 3x + 10$ completely given $x = 5$ is a zero.

9. Find all of the zeros of the function $f(x) = x^3 - 2x^2 - 23x + 60$, given $f(3) = 0$.

10. Find the other zeros of the function given that one of the zeros is 7.
$f(x) = 10x^3 - 81x^2 + 71x + 42.$

11. Find all of the possible rational zeros of the function $f(x) = 5x^4 - 9x^3 + 3x^2 - 6x + 20$

12. Find all of the zeros of the functions below:

a. $f(x) = x^3 - 4x^2 + x + 6$

b. $f(x) = x^3 + 2x^2 + 4x + 8$

13. Write a polynomial function with a leading coefficient of 1 and the following zeros. Write in factored form and standard form.

a. $1, \ -2, \ 6$

Factored Form: _____

Standard Form: _____

b. $0, \ -2, \ 3i$

Factored Form: _____

Standard Form: _____

c. $1,\ 2-i$

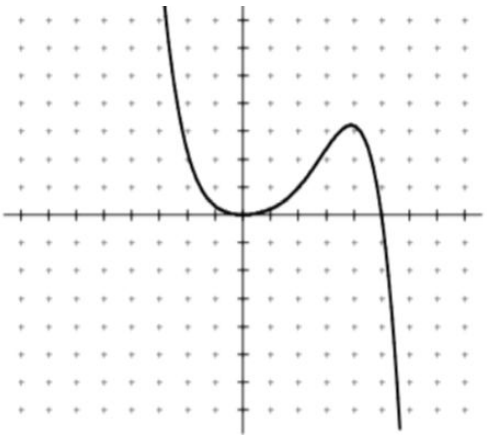
Factored Form: _____

Standard Form: _____

14. Write a possible equation given the graph:

Zeros: _____

Equation: _____



15. Determine how many possible positive, negative, and imaginary zeros the following functions have:

a. $f(x) = x^5 + 2x^4 - 3x^3 + x^2 + 10$

b. $f(x) = x^4 + x^3 - 2x^2 - 9x - 1$