CCSS Advanced Algebra 4 Name:________________________

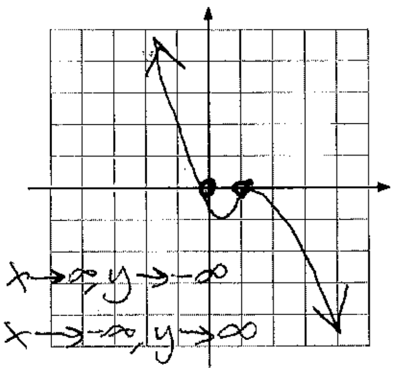
Graphing Polynomials

1. After factoring, sketch the graph of the equation $y = -x^3+2x^2-x$. Remember to look for common terms.

$y = -x(x^2-2x+1)$

$-x(x-1)(x-1)$

$-x(x-1)^2$



Roots = 0, 1

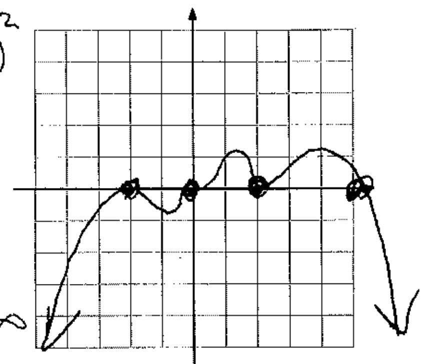
Multiplicity: 1, 2

E.B: As $x \to \infty$, $y \to -\infty$

As $x \to -\infty$, $y \to \infty$

2. Sketch the graph of the equation with a double root at –2, a single root at 5, a triple root at 0 and a double root at 2. Assume the leading coefficient is negative. Write the equation of the function that describes the graph.

Equation: $-5(x+2)^2(x-5)x^3(x-2)^2$



Degree = 8

L.C. = –5

E.B: As $x \to \infty$, $f(x) \to -\infty$

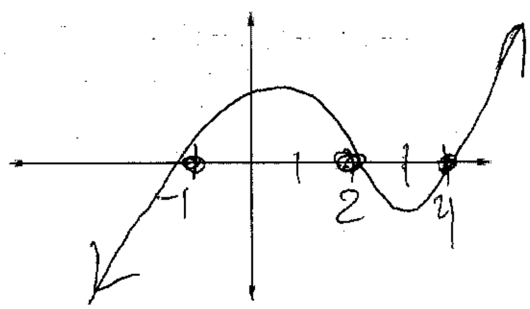
As $x \to -\infty$, $f(x) \to -\infty$

Sketch the graph of each function.

7. $f(x) = (x + 1)(x - 2)(x - 4)$

Degree = 3

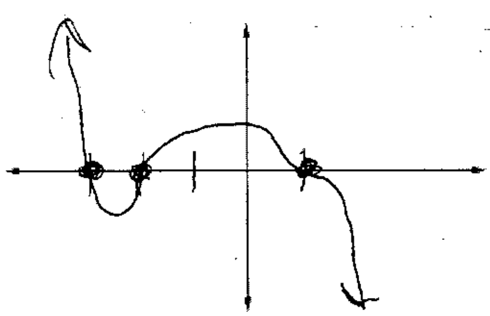
L.C. = 1



8. $f(x) = -(x + 3)(x + 2)(x - 1)^3$

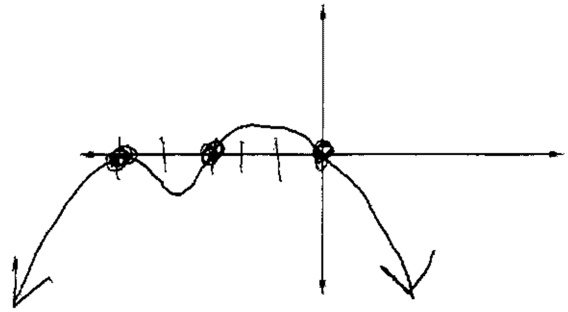
Degree = 5

L.C. = –1



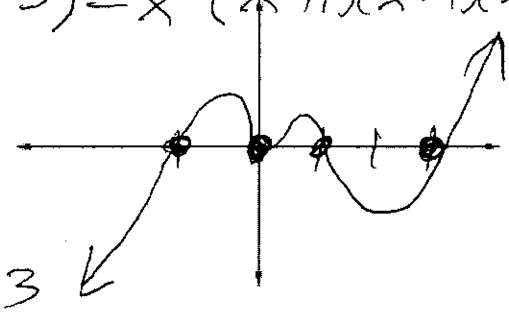
9. $f(x) = -x(x + 5)^2(x + 3)$

Degree = 4
L.C = -1



10. $f(x) = x^5-3x^4-x^3+3x^2 = x^2(x^3-3x^2-x+3) = x^2(x+1)(x-1)(x-3)$
Given that f(-1)=f(1)=0

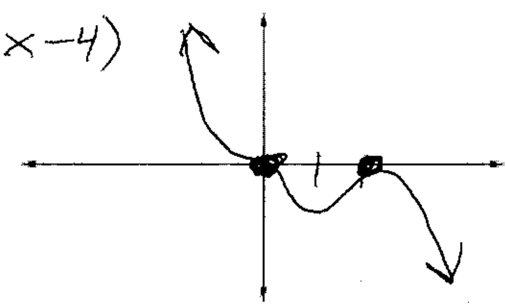
$f(-1)=0 \rightarrow (x+1)$ Degree = 5
$f(1)=0 \rightarrow (x-1)$ L.C = 1



	x^2	$-2x$	-3
x	x^3	$-2x^2$	$-3x$
-1	$-x^2$	$2x$	3

x^2-2x-3
$(x-3)(x+1)$

11. $f(x) = -x^5+4x^4-4x^3 = -x^3(x^2+4x-4)$
Given that f(2)=0
$= -x^3(x-2)^2$



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