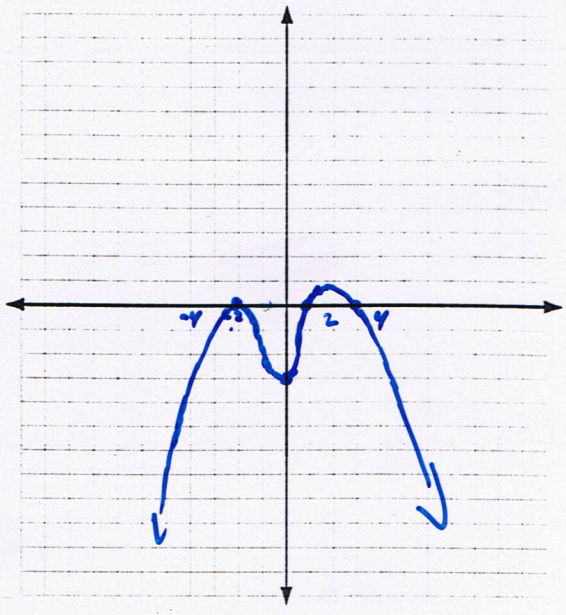
Example: Sketch the graph of

$y = -0.25(x - 1)(x - 3)(x + 2)^2$

Degree	Leading Coefficient	End Behaviour
4	-0.25	as $x \to \infty, y \to -\infty$ as $x \to -\infty, y \to -\infty$
y-intercept	**Zeros and x-intercepts**	
-3	1, 3, -2 (double)	



Investigation #2: As a class

Even Function: if the exponent of each term of the equation is even

Property: $f(-x) = f(x)$

Symmetry: line of symmetric ($x = 0$)

Odd Function: if the exponent of each term of the equation is odd

Property: $f(-x) = -f(x)$

Symmetry: point of symmetry (0,0)

Example: Determine if each of the following has a line of symmetry, point of symmetry or neither.

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

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

$= -2x^4 + 3x^2 - 7$

$= f(x)$

$\therefore$ line of symmetry

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

b) $f(x) = 3x^5 - 2x^3 + 6x$

$f(-x) = 3(-x)^5 - 2(-x)^3 + 6(-x)$

$= -3x^5 + 2x^3 - 6x$

$= -(3x^5 - 2x^3 + 6x)$

$= -f(x)$

pt of symmetry

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

$f(-x) = 2(-x)(x+1)(-x$

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

$= -2x(x-1)(x$

$\neq -f(x)$

so, no symmetry.

Homework: pg 39 #1 - 8