2.3 Graphing Polynomials

Zeroes

x-int $(-,0) \Rightarrow$ Real zeroes
Imaginary zeroes
} "Add" up to highest Degree.

Multiplicity: How many times a zero appears in a Function

Even $\Rightarrow$ Kisses x-axis

ODD $\Rightarrow$ Goes Through.

y-intercepts

$(0,-) \Rightarrow$ plug zero in for x.

Where the graph crosses y-axis

End behavior

$\lim_{x \to \infty} \Rightarrow \lim_{x \to R}$

$\lim_{x \to -\infty} \Rightarrow \lim_{x \to L}$

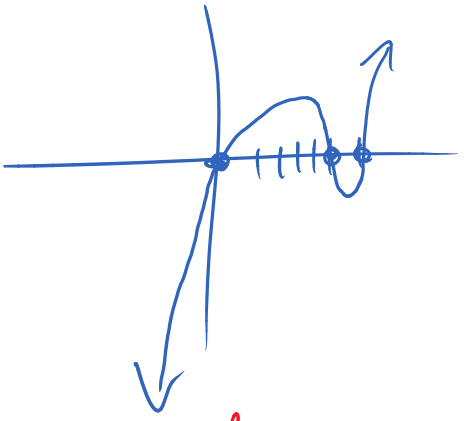
Even Degree $\Rightarrow$ The left and Right end behavior are the same

ODD Degree $\Rightarrow$ The L. and R. End Behavior are opposite.

$f(x) = x^3 - 11x^2 + 30x$

$0 = x(x-6)(x-5)$

y-int: (0,0) $x = 0, 6, 5$



$\lim_{x \to \infty} = \infty$

$\lim_{x \to -\infty} = -\infty$

$g(x) = -2x^3(x-2)^2(2x-10)^2$

$0 = -2x^{(3)}(x-2)^{(2)}(2x-10)^{(2)}$

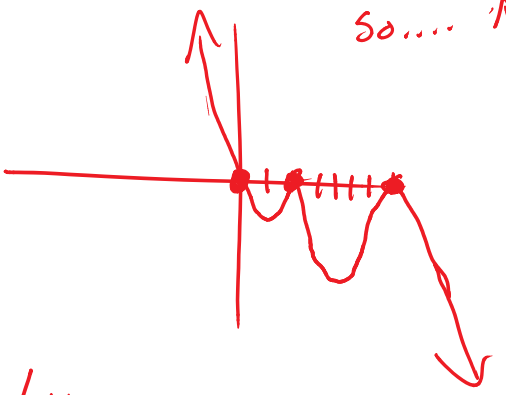
y-int: (0,0) $x = 0, 2, 5$

Kiss Re x-axis

$-2x^3(x^2)(2x)^2 = -8x^7$

Leading terms

so....



$\lim_{x \to \infty} = -\infty$

$\lim_{x \to -\infty} = \infty$