

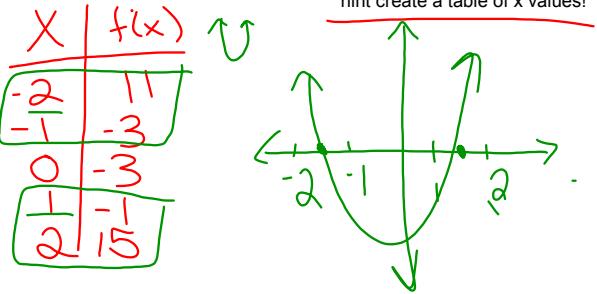
Lesson 2.8- Sketching a Polynomial Function.notebook

October 26, 2017

Lesson 2.8 Objective: SWBAT sketch a polynomial function without a calculator.

Kickoff

- 1) Find the x and y-intercepts of $f(x) = x^4 - 10x^2 + 9$
- 2) Graph the following $f(x) = x^4 + x - 3$ from $[-2, 2]$ using the intermediate value theorem. (without a calculator)
*hint create a table of x values!



Equation	Graph
1) $f(x) = x^3 - 2x$	<p>a) The degree is <u>3</u> LC: <u>1</u></p> <p>b) End behavior:</p> <ul style="list-style-type: none"> as $x \rightarrow \infty, f(x) \rightarrow \infty$ as $x \rightarrow -\infty, f(x) \rightarrow -\infty$ <p>c) The real roots occur when $x = \frac{-\sqrt{2}, 0, \sqrt{2}}{\text{none}}$</p> <p>$x^3 - 2x = 0$ $x(x^2 - 2) = 0$ $x=0$ $x^2 - 2 = 0$ $x = \pm\sqrt{2}$</p>

2) $f(x) = -(x+1)(x-2)(x-3)$

a) The degree is _____

b) End behavior:

- as $x \rightarrow \infty, f(x) \rightarrow _____$
- as $x \rightarrow -\infty, f(x) \rightarrow _____$

c) The real roots occur when $x = _____$

- Roots bounce at $x = _____$
- Roots cross the x-axis at $x = _____$

3) $f(x) = x^5 - 37x^3 + 36x$

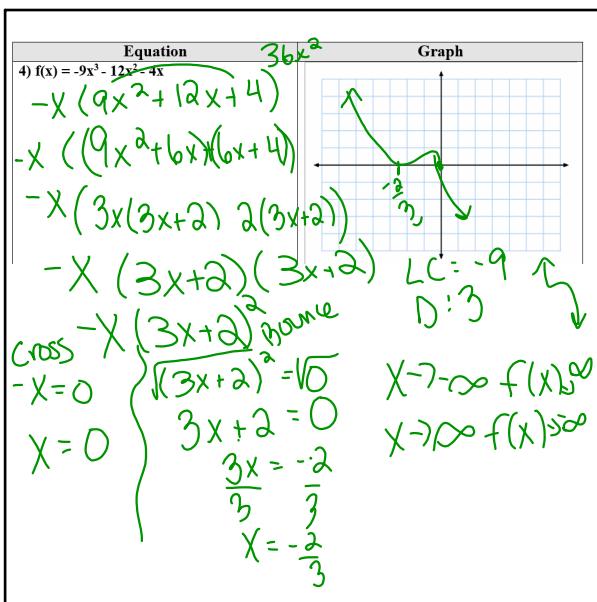
a) The degree is _____

b) End behavior:

- as $x \rightarrow \infty, f(x) \rightarrow _____$
- as $x \rightarrow -\infty, f(x) \rightarrow _____$

c) The real roots occur when $x = _____$

- Roots bounce at $x = _____$
- Roots cross the x-axis at $x = _____$



5) $f(x) = -4x^4 - 6x^3 + 40x^2$

