Questions on Lesson 5.4?
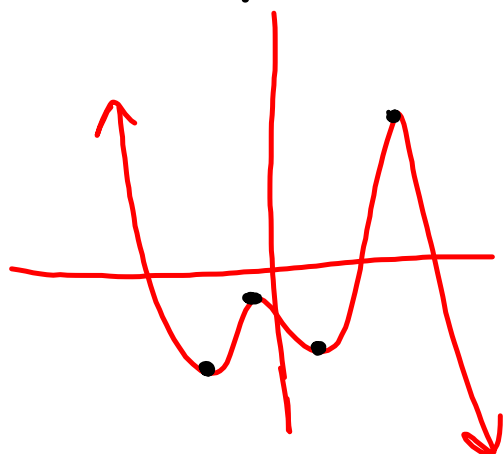
We will be taking our content mastery quiz in

a few minutes!

3 questions on quiz today
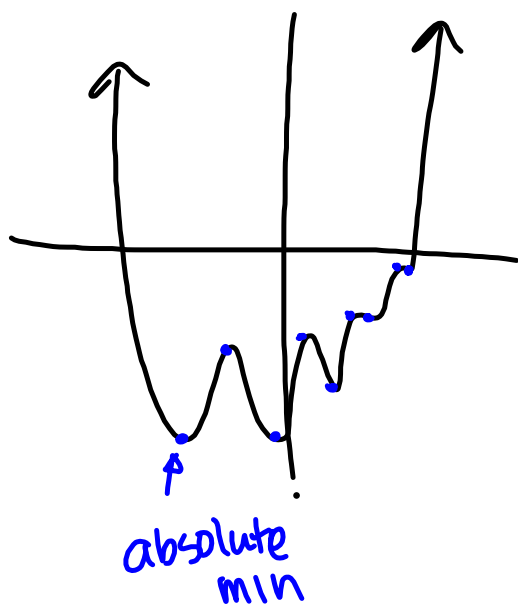
End Beh:

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

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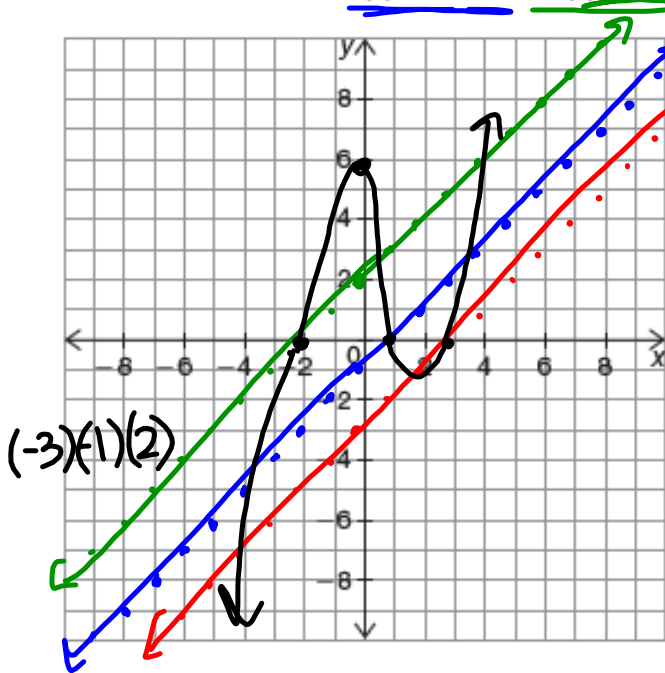
4 extrema

absolute min

That Graph Looks a Little Sketchy

5.5

Building Cubic and Quartic Functions

Lesson 5.5 begins on pg.385 in your book, but what's below is not in your book.

Consider the functions $k(x) = x - 1$, $m(x) = x + 2$, $n(x) = x - 3$, and $f(x) = k(x) \cdot m(x) \cdot n(x)$.

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

a. Graph $k(x)$, $m(x)$, and $n(x)$.

b. Determine the degree of the function $f(x)$. Explain your reasoning.

3rd degree

c. Determine the zeros of $f(x)$. Explain your reasoning.

$x = 1, -2, 3$

d. Determine the y-intercept of $f(x)$. Explain your reasoning.

$6 \ b/c \ (-3)(-1)(2)$

$(-3)(1)(2)$

e. Determine the intervals over which the value of $f(x)$ is positive. Determine the intervals over which the value of $f(x)$ is negative. Explain your reasoning.
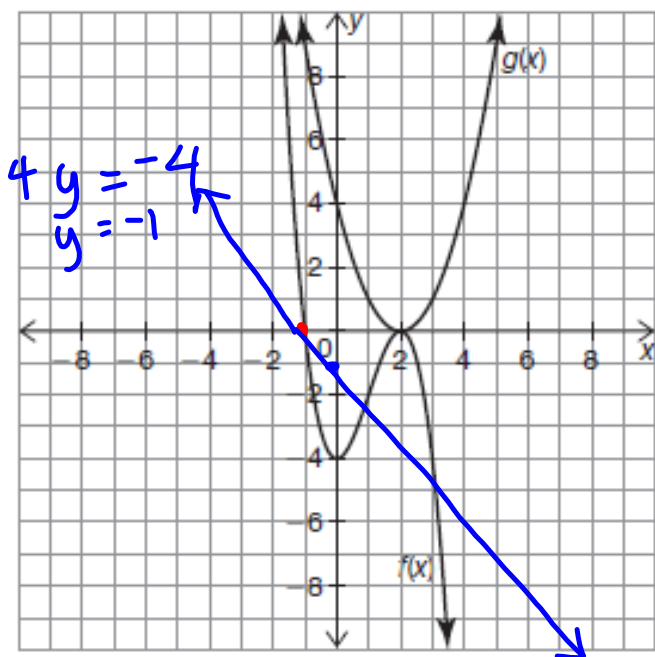
f. Sketch $f(x)$.

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

$f(x) = (x^2 + \overset{+2x-x}{x} - 2)(x-3)$

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

$\overline{x^3 - 2x^2 - 5x + 6}$

↑ positive   ↑ y-intercept

Oct 9-8:12 AM

2

This is also not in your book.

Consider the graphs of the quadratic function $g(x) = (x - 2)^2$ and the cubic function $f(x) = g(x) \cdot h(x)$.

$4y = -4$
$y = -1$

a. Determine the degree of the function $h(x)$.

Explain your reasoning.

linear

b. Determine the x-intercept(s) of $h(x)$.

Explain your reasoning.

$X = -1$

c. Determine the y-intercept of $h(x)$.

Explain your reasoning.

$y = -1$

d. Determine the equation of the function $h(x)$. Explain your reasoning.

$y = -1x - 1$

IN BOOK:

7 on p.391
p.392
2 on p.398

Oct 29-9:00 AM

<p style="text-align:center; color:blue;">This is not in your book.</p>

3. Determine 2 linear functions and 1 quadratic function such that the product of the 3 functions will build a quartic function with a double root at -1 and a y-intercept at $(0, -3)$. Write the equation of the quartic function. Explain your reasoning.

4. Determine 2 quadratic functions such that the product of the 2 functions will build a quartic function with only 2 x-intercepts at $(-2, 0)$ and $(1, 0)$ and a y-intercept at $(0, -8)$. Write the equation of the quartic function. Explain your reasoning.

Classwork/Homework
Work on Lesson 5.5 in your book
for the remainder of class.

Oct 21-8:47 AM