HW: From today's graphing packet:

#1, 4, 7, 20 (note that 20 is going the other direction)

DO NOW: Checkin on interpreting the graph of the derivative

(we will look at the next slide before you do the checkin)

How to write justifications

f _____on

(some description about f...is increasing, is decreasing, has a local max , has a point of inflection, etc...)

the interval/at the point when_____

(specific domain reference...x values.. write as an interval or at a specific value, x=b))

since_____

(write something about CALCULUS that explains why this is true)

at those/that values/value.

Instructions from graphing packet

In Exercises 1 through 6, the accompanying figure shows the graph of the derivative of a function f whose domain is the set of all real numbers and which is continuous everywhere. These graphs are the same as those shown in the indicated exercise of Exercises 3.4. From this graph, determine the abscissas of any points of inflection of the graph of f and where the graph of f is concave upward and concave downward. Incorporate this information and the information obtained in the corresponding exercise of Section 3.4 in a table similar to Tables 2 and 3 of this section. Sketch a possible graph of f having the properties in the table if the only zeros of f are those stated.

2. Refer to Exercise 40 of Exercises 3.4. Zeros of f are

abscissa = x-value
ordinate = y-value

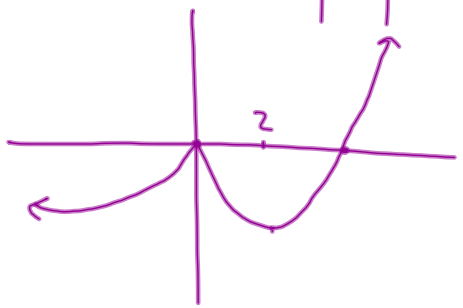
Find stationary pts,
~~incr~~ intervals of inc and dec
local max and local min

Important pts $x=2$ $x=0$ $x=4$

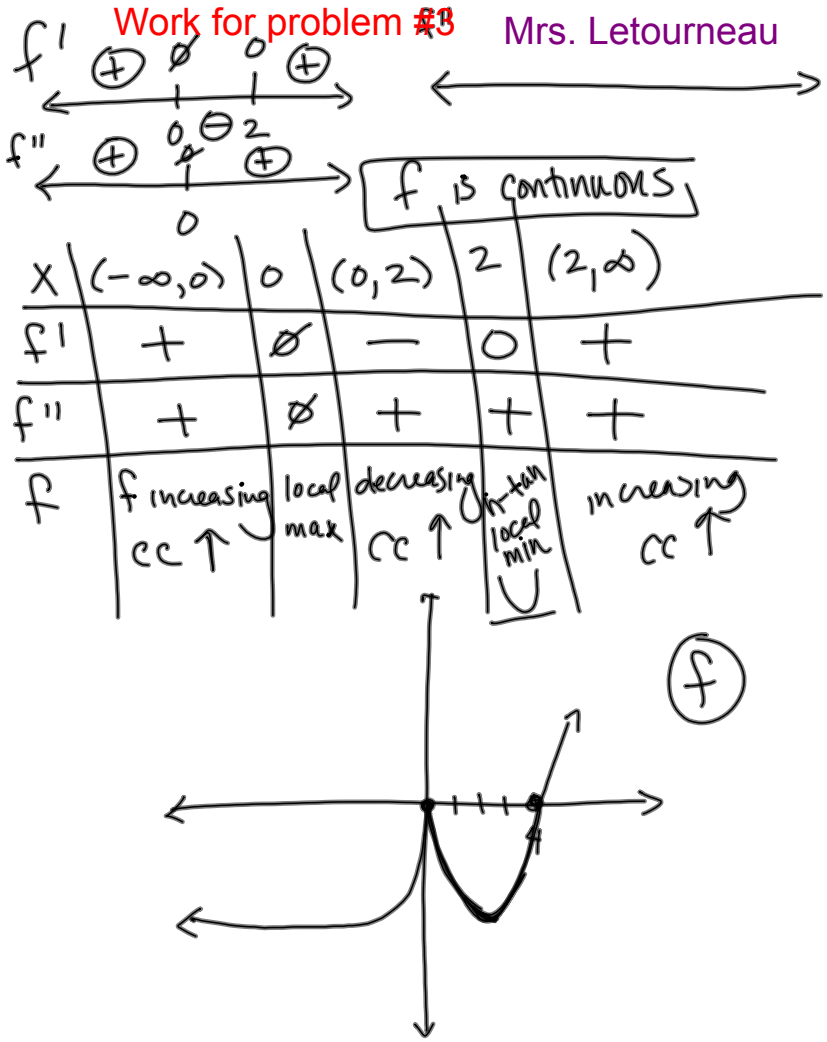
f' : $+$ | $-$ | $+$ at 0, 2

f'' : $+$ | undef | $+$

x	$(-\infty, 0)$	0	$(0,2)$	2	$(2, \infty)$
f'	$+$	$\emptyset$	$-$	0	$+$
f''	$+$	0	$+$	$+$	$+$
f	increasing conc ↑	local max	dec, conc ↑	local min	increasing conc ↑

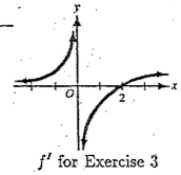


Work for problem #3 Mrs. Letourneau



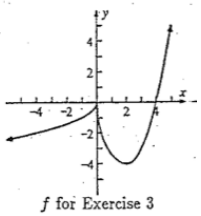
3. Ex. 3.4.41. Zeros of f are 0 and 4.

	$f'(x)$	$f''(x)$	f is/has a	graph is/has a
$x < 0$	+	+	increasing	concave upward
$x = 0$	d.n.e	d.n.e	relative maximum	vertical tangent
$0 < x < 2$	−	+	decreasing	concave upward
$x = 2$	0	+	relative minimum	concave upward
$x > 2$	+	+	increasing	concave upward



f' for Exercise 3

4. Ex. 3.4.42. Zeros of f are -1 and 1



f for Exercise 3

because there was an infinite discontinuity in f', there is a cusp in f (abrupt change in slope from +infinity to -infinity)

Because there is no change in concavity, there is no inflection point in this graph of f.