Name: SOLUTIONS

Quiz #9 - November 3, 2006

1. Define *critical number* and *inflection point.*

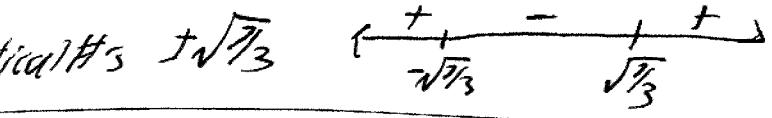
c is a critical # if $f'(c)=0$ or $f'(c)$ DNE

an inflection point is a point on the graph where the concavity changes

2. Let $f(x) = (x-1)(x+3)(x-2)$. Find the intervals on which $f(x)$ is increasing/ decreasing. Find the intervals on which $f(x)$ is concave up/concave down. Determine all local maximums and/or minimums. Then use this information to neatly sketch the graph of $y = f(x)$, labelling all local max/mins, inflections points, and x and y intercepts.

$f(x) = x^3 - 7x + 6$ intercepts $(0,6)$, $(1,0)$ $(-3,0)$ $(2,0)$

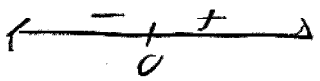
$f'(x) = 3x^2 - 7$ critical #'s $\pm\sqrt{7/3}$



increasing $(-\infty, -\sqrt{7/3}) \cup (\sqrt{7/3}, \infty)$
decreasing $(-\sqrt{7/3}, \sqrt{7/3})$

local max at $x = -\sqrt{7/3}$
local min at $x = \sqrt{7/3}$

$f''(x) = 6x$



concave down $(-\infty, 0)$
concave up $(0, \infty)$
IP $(0,6)$