Math 157 - Quiz 7

October 22, 2014

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (6 points) Let $f(x) = x^3 - 9x^2 + 15x + 3$. Find the critical numbers. Then find open intervals on which f is increasing/decreasing and identify all relative extreme values.

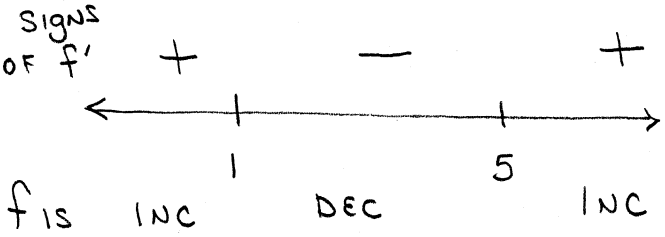
$f'(x) = 3x^2 - 18x + 15$

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

$= 3(x-5)(x-1)$

$f'(x) = 0 \Rightarrow x = 5, x = 1$

$f'(x)$ DNE NOWHERE



f IS INCREASING ON

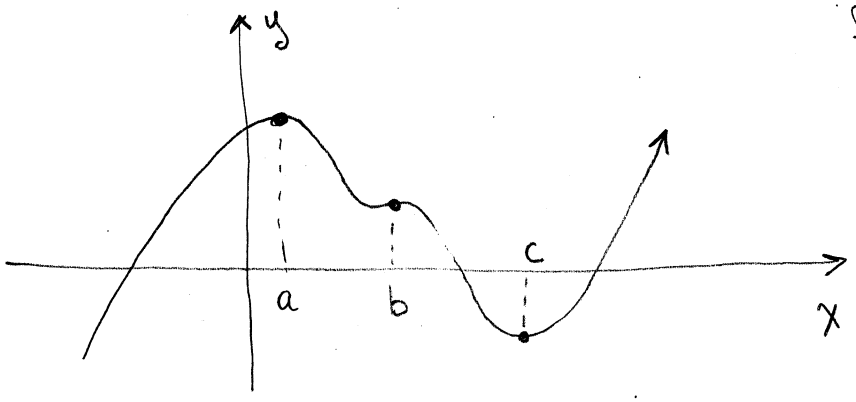
$(-\infty, 1) \cup (5, \infty)$

f IS DECREASING ON $(1, 5)$

$f(1) = 10$ ← REL MAX

$f(5) = -22$ ← REL MIN

2. (4 points) Sketch the graph of a continuous function that has exactly three critical points. One of the critical points should be a local maximum, one should be a local minimum, and one should be neither.



f(a) IS A REL MAX.

f(c) IS A REL MIN.

f(b) IS A NOTHING.