

Name: _____

Math 211 Quiz 7

Section: 302 303

Mar 14, 2012

Calculators are not allowed in this quiz.

1. Determine the critical points of the given function and classify each critical point as a relative maximum, a relative minimum, or neither.

$$f(t) = \frac{t}{t^2 + 3}$$

2. Determine where the given function is concave up and concave down. Find the inflection point and use the second derivative test to find the extrema.

$$f(x) = \frac{1}{3}x^3 - 9x + 2$$

Bonus problem. An efficiency study of the morning shift (from 8:00 A.M. to 12:00 noon) at a factory indicates that an average worker who arrives on the job at 8:00 A.M. will have produced Q units t hours later, where

$$Q(t) = -t^3 + \frac{9}{2}t^2 + 15t.$$

- a. At what time during the morning is the worker performing most efficiently?
- b. At what time during the morning is the worker performing least efficiently?