Quiz# 5

Name: ID #: Section: 1 Serial #:

1. Suppose that $f'(x) \leq 1$ for $2 \leq x \leq 5$. What is the largest possible value of $f(5) - f(2)$?

2. Write the linearization of $f(x) = e^{\tan^{-1}(3x)}$ at $x = 0$.

3. If the function $f(x) = axe^{bx^2}$ has the maximum value $f(2) = 1$ where a and b are real numbers, then find a and b.

Mathematics & Statistics MATH 101 Duration: 10 minutes

Quiz# 5

Name: ID #: Section: 3 Serial #:

1. Let $f(x) = \sin(x)\cos(x)$, $0 \le x \le \pi$. Answer the following:
   a. Find the local and absolute extrema (including the two coordinates).
   b. Find the intervals of increase and decrease.
   c. Find the intervals of concavity, and inflection points.

2. Suppose that f is differentiable on R and satisfies $1 \le f'(x) \le 3$ for all values of x. Then find a and b, where $a \le f(7) - f(5) \le b$.