Math 1552 Fall 2018

Quiz 1

Time Limit: 25 Minutes Teaching Assistant _____

Please fill out the information as neatly as possible to associate this booklet to your user information in Canvas/Crowdmark. Your GT Username is typically the first letter of your first name, followed by your last name, followed by a number. For example, the course coordinator's GT Username is **sbarone7** because his name is Sal Barone. Your GT Username is NOT a string of numeric digits.

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Make sure your **booklet number**, which is the number $\#n$ next to the QR code in the top corner of the page, is the same on every page, or else your pages will not all go to your account when being graded in Crowdmark.

You may *not* use your books, notes, or any calculator on this quiz.

SCRATCH WORK

You may want to work out problems on this page, but NO WORK on this page will be graded. Do NOT refer to this page, it is not scanned into crowdmark.

Please, take a minute to check that every page of your booklet has the same booklet number (the number $\#n$ next to the QR code).

1. (6 points) Evaluate the indefinite integral: $\displaystyle\int \frac{\left(\sqrt{x} - \frac{1}{x}\right)}{x}\, dx$

2. Estimate the area bounded by $y = -x^2 + 2x + 3$ on the interval $[-1, 3]$ using:

   (a) (5 points) an upper sum with $n = 4$ subintervals. Simplify your answer.

   (b) (5 points) a left-endpoint approximation with $n = 4$ subintervals. Simplify as far as you can.

3. Consider the function $f(x) = -x^2 + 3x$ on the interval $[0, 3]$.

(a) (9 points) Find a closed formula for the right-endpoint Riemann sum to approximate the area bounded by $y = f(x)$, $x = 0$, $x = 3$, and the x-axis using n evenly spaced subintervals. Your answer should be *a function of n which does not include "sigmas"*. You may need these formulas:

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}, \quad \sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$$

(b) (5 points) Evaluate $\int_0^3 f(x)\,dx$ by taking the limit of your answer in part (a) as $n \to \infty$.