

Math 1271 Quiz 10

April 24, 2014

Name: _____

TA: _____

NO CALCULATORS. NO HANDHELD DEVICES. NO BOOKS OR REFERENCE MATERIALS OF ANY KIND.

Time allowed: 20 minutes; Grader: Ashley Earls. Good luck!

1. Compute the following integral:

$$\int_0^{\sqrt{2}} \frac{x}{\sqrt{1+4x^2}} dx$$

2. (15 points, no partial credit) True or false? The average value of the function $f(x) = 4x - x^2$ on the interval $[2, 5]$ is

$$\frac{1}{3} \int_2^5 4x - x^2 dx$$

True

False

3. (15 points, no partial credit) Let $f(x)$ and $g(x)$ be any functions. True or false?

$$\int_a^b f(x)g(x) dx = \left(\int_a^b f(x) dx \right) \left(\int_a^b g(x) dx \right)$$

True

False

4. (35 points) Find the area enclosed by the line $y = x + 1$ and the parabola $y = \frac{1}{2}x^2 - 3$. Note that the only two points of intersection for these graphs are $(-2, -1)$ and $(4, 5)$. No need to work out the arithmetic.