

Name: _____ Date: _____

Math 2 — Quiz 7

This is a take-home quiz. Work on your own without notes, calculators or other aids. There is no time limit but you should do all your work in one sitting.

You may find one or more of these indefinite integrals useful.

$$\int \tan(\theta) d\theta = \ln|\sec(\theta)| + C \quad \int \sec(\theta) d\theta = \ln|\sec(\theta) + \tan(\theta)| + C$$

$$\int \tan^3(\theta) = \frac{1}{2} \tan^2(\theta) - \int \tan(\theta) d\theta$$

$$\int \sec^3(\theta) = \frac{1}{2} \sec(\theta) \tan(\theta) + \frac{1}{2} \int \sec(\theta) d\theta$$

1. Calculate the arc length of $y = \frac{x^2}{2}$ for $0 < x < 1$.

2. The waiting time until a new email arrives in your inbox is given in hours by a random variable X with density function $f(x) = 3e^{-3x}$ for $x > 0$. Calculate:

(a) the probability you have to wait less than an hour for the next email

(b) the expected value of the waiting time until the next email