Name: _____

Math 252 Calculus II (Bueler) Wednesday 7 March 2018

Quiz #7

In class. 25 minutes. No textbook or notes or calculator. 30 points total.

1. **(a)** (*3 pts*) At right, sketch the region bounded by the curves. Also plot your estimate of the centroid $(\bar{x}, \bar{y})$.

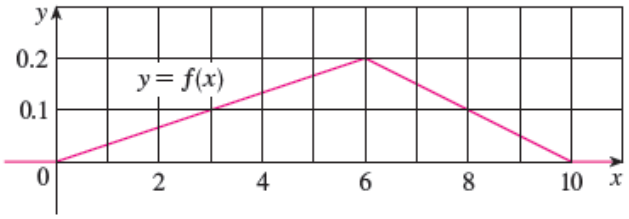
$$y = \sqrt{x}, \quad y = 0, \quad x = 4$$

(b) (*7 pts*) Find the (exact) coordinates of the centroid of the region in **(a)**.

2. (*5 pts*) Show that $f(x)$ is probability density function:

$$f(x) = \begin{cases} xe^{-x}, & x > 0, \\ 0, & x \le 0 \end{cases}$$

3. **(a)** (*5 pts*) Explain why the graph $y = f(x)$ below shows a probability density function.



(b) (*5 pts*) Use the graph in **(a)** to find $P(0 \leq X \leq 8)$.

4. (*5 pts*) The function below is a probability density function. Calculate its mean.

$$f(x) = \begin{cases} \frac{1}{50}x, & 0 < x < 10, \\ 0, & \text{otherwise} \end{cases}$$