

# Math 1A

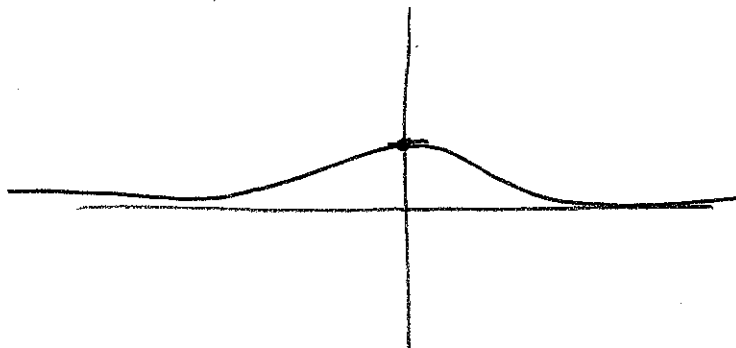
## Quiz 12 - November 23, 2009

Name:

KEY

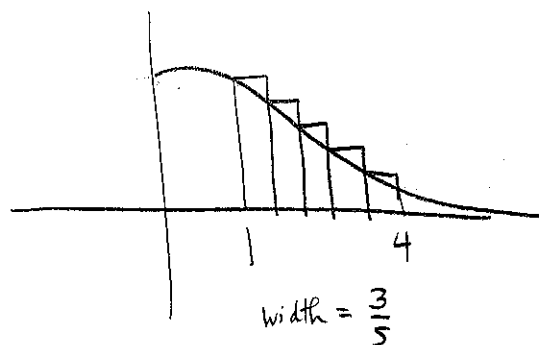
1. Let  $f(x) = e^{-x^2}$ .

- (a) Sketch the graph of the function  $f(x)$ , (to save time, just compute  $f(0)$  and the limits at  $\pm\infty$  and draw a reasonable sketch. You can figure out critical points if you have extra time.)



- (b) Write down an approximation for the area under the graph of  $f(x)$  from  $x = 1$  to  $x = 4$  using 5 rectangles with left endpoints. (No need to simplify your answer)

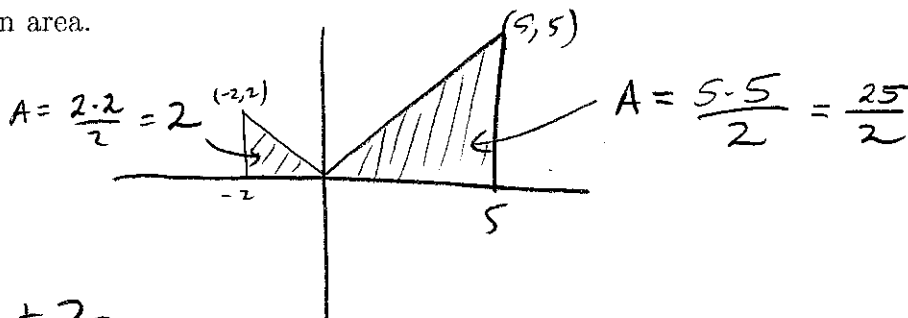
$$A \approx \frac{3}{5} f(1) + \frac{3}{5} f\left(\frac{8}{5}\right) + \frac{3}{5} f\left(\frac{11}{5}\right) + \frac{3}{5} f\left(\frac{14}{5}\right) + \frac{3}{5} f\left(\frac{17}{5}\right)$$



2. Evaluate the integral

$$\int_{-2}^5 |x| dx$$

by interpreting it as an area.



$$\int_{-2}^5 |x| dx = \text{Total Area} = \frac{25}{2} + 2$$

3. Use Newton's method to approximate  $\sqrt[4]{83}$  using an initial guess of  $x_1 = 3$ .

Let  $f(x) = x^4 - 83$ . Then

$$x_2 = x_1 - \frac{f(x_1)}{f'(x_1)} = 3 - \frac{3^4 - 83}{4(3)^3} = 3 - \frac{-2}{4 \cdot 27} = 3 + \frac{2}{108}$$