Math 171 - Quiz 10

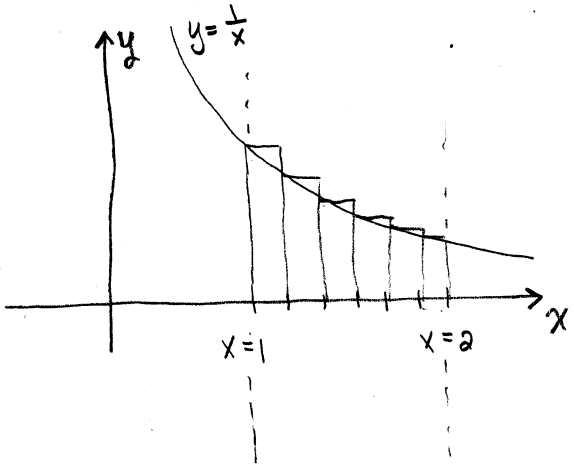
November 20, 2013

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (5 points) Let $f(x) = \frac{1}{x}$. Using six subintervals of equal length, compute a Riemann sum for f on $[1, 2]$. Sketch the graph of f and the rectangles associated with your Riemann sum.



$\Delta x = \frac{2-1}{6} = \frac{1}{6}$

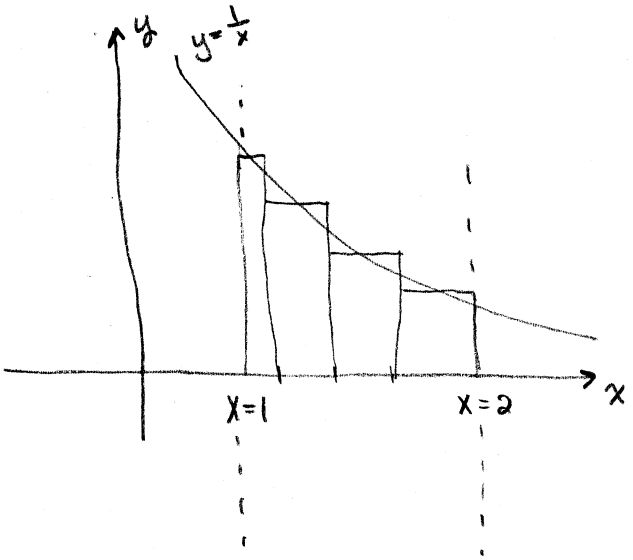
PARTITION IS $\frac{6}{6} < \frac{7}{6} < \frac{8}{6} < \frac{9}{6} < \frac{10}{6} < \frac{11}{6} < \frac{12}{6}$

USING LEFT ENDPOINTS ...

$$\frac{1}{6}\left(\frac{6}{6} + \frac{6}{7} + \frac{6}{8} + \frac{6}{9} + \frac{6}{10} + \frac{6}{11}\right)$$

$$= 0.736544$$

2. (5 points) Repeat the problem above using four subintervals whose lengths are all different. Use longer subintervals where the graph is flatter (that is, toward the right).



PARTITION:

$1 < 1.1 < 1.3 < 1.6 < 2$

$\Delta x_1 = 0.1$ $\quad \Delta x_3 = 0.3$

$\Delta x_2 = 0.2$ $\quad \Delta x_4 = 0.4$

USING SUBINTERVALS MIDPOINTS ...

$$\frac{1}{1.05}(0.1) + \frac{1}{1.2}(0.2) + \frac{1}{1.45}(0.3) + \frac{1}{1.8}(0.4)$$

$$= 0.6910235$$