Math 115 Quiz 10: $\oint$ 5.1-3 Summing Rectangles **Wed 8 December 2010**
Name: _____

You have 30 minutes to complete this quiz. Make your variables clear and consistent (so if you want to say, for example, $\frac{dy}{dx}$, you should also mention $y = f(x)$, or "y is a function of x"). Calculators are OK.

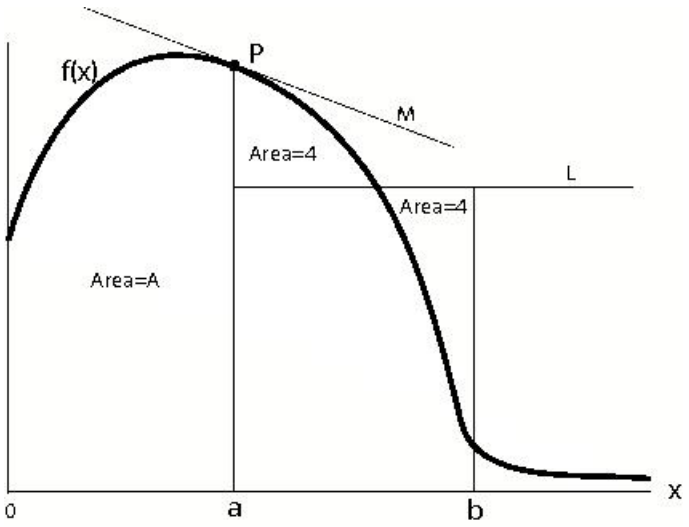
1. **Definitions/Concepts.** (1 pt each) True or False? No explanation necessary.

   (a) For an increasing function, the left-hand sum on a given interval with a given number of subdivisions is always less than the right-hand sum.

   (b) A 4-term left-hand Riemann sum approximation cannot give the exact value of a definite integral.

   (c) The units for an integral of a function $f(x)$ are the same as the units for $f(x)$.

2. **Questions/Problems.** Below you will write expressions for each of various quantities indicated on the graph of $f(x)$. Your expressions may involve integrals or derivatives. For example, if asked for the "x-coordinate of the point P," you would write "a".



a) (1 pt) The height (above the x-axis) of the point P.

b) (1 pt) The slope of the line M.

c) (1 pt) The size of the area A.

d) (1 pt) The height of the line L.

3. **Computations/Algebra.**

(a) (1 pt) If $F(t) = \frac{1}{2}\sin t^2$, find $F'(t)$.

(b) Find $\int_{0.2}^{0.4} \sin t \cos t dt$ two ways:

(i) (1 pt) Numerically.

(ii) (1 pt) Using the Fundamental Theorem of Calculus.