NAME: SOLUTIONS

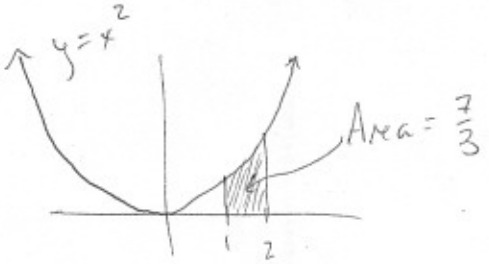
Math 105 - Quiz 15 - December 7, 2007

Instructions: Show all of your work and circle your final answers. Calculators are allowed, but notes and books are not.

1. (10 pts.) Evaluate $\int_1^2 x^2\,dx$.

$\frac{x^3}{3}$ is an antiderivative of x^2, so, by FTC,

$$\int_1^2 x^2\,dx = \frac{x^3}{3}\Big]_1^2 = \frac{2^3}{3} - \frac{1^3}{3} = \frac{8}{3} - \frac{1}{3} = \boxed{7/3}$$



2. (10 pts.) Approximate $\int_1^7 \frac{x}{x+1}\,dx$ with R_3, a right endpoint Riemann sum with 3 subintervals.

$[1,7]$ has length 6. 3 subintervals → each has length $\frac{6}{3} = 2$. $[1,3], [3,5], [5,7]$.

Take right endpts. Find areas of rectangles.

$$R_3 = f(3)\cdot 2 + f(5)\cdot 2 + f(7)\cdot 2$$
$$= \frac{3}{4}\cdot 2 + \frac{5}{6}\cdot 2 + \frac{7}{8}\cdot 2$$
$$= \frac{3}{2} + \frac{5}{3} + \frac{7}{4}$$
$$= \frac{18}{12} + \frac{20}{12} + \frac{21}{12} = \boxed{\frac{59}{12}}$$