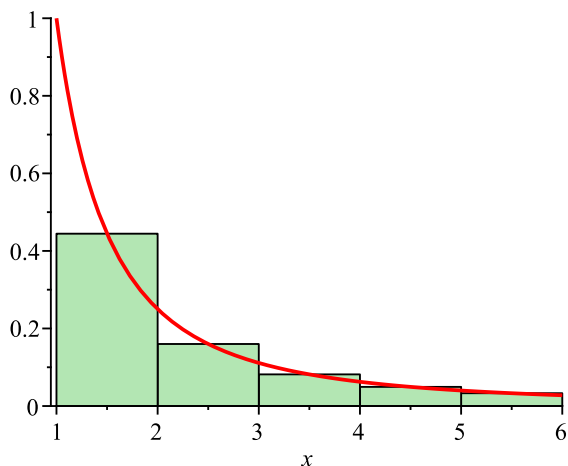


Answers to Week in Review 4

(NOTE: the first 2 problems were modified Monday afternoon. Check to be sure you have the most recent set.)

1. $\frac{4}{5} \ln|x-4| + \frac{1}{5} \ln|x+1| + C$
2. $1 + 3 \ln 2 - \ln 3$
3. $\frac{1}{9} \ln|x-1| - \frac{2}{3(x-1)} - \frac{1}{9} \ln|x+2| + C$
4. $\frac{1}{2} \ln(x^2 + 1) - 3 \arctan x + 2 \ln|x-1| + C$
5. a) $M_5 = \frac{4}{9} + \frac{4}{25} + \frac{4}{49} + \frac{4}{81} + \frac{4}{121} = \frac{9226996}{12006225} \approx 0.7685176648$



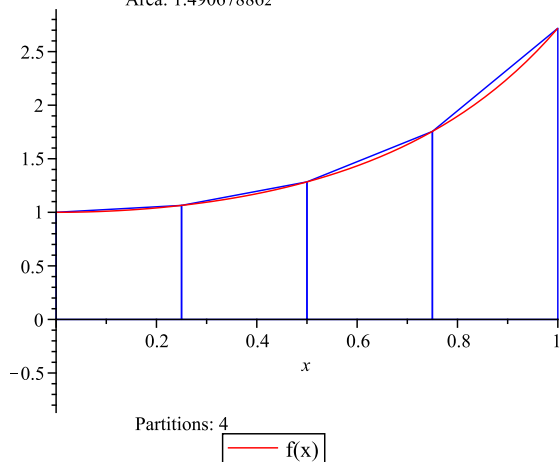
b) The exact error is $E_M = \int_1^6 \frac{dx}{x^2} - M_5$

$$= -\frac{1}{x} \Big|_1^6 - M_5$$

$$= \frac{5}{6} - \frac{9226996}{12006225} \approx 0.0648156685$$

6. a) $T_4 = \frac{1}{8}(1 + 2e^{1/16} + 2e^{1/4} + 2e^{9/16} + e)$

An Approximation of the Integral of
 $f(x) = \exp(x^2)$
 on the Interval $[0, 1]$
 Using the Trapezoid Rule
 Area: 1.490678862



b) $|T_4| \leq \frac{e}{32}$

7. n must be even and at least 6.