Math 155 – Spring 2002 WORKSHEET 11

NAME: ___________________________________________ Section: _______

1. For the function \( f(x) = 4x^2 + 1 \) on the interval \([0, 2]\), do the following:
   
   (a) Write the Riemann Sum for the partition of \([0, 2]\) into the 4 subintervals \([0, \frac{1}{2}]),
       \([\frac{1}{2}, 1]), \([1, \frac{3}{2}]), \([\frac{3}{2}, 2])\), when the right hand endpoints are selected for the \(x_i^*\).

   (b) Use the regular partition of \([0, 2]\) into \(n\) equal subintervals and select the right
       hand endpoints for the \(x_i^*\) to write a Riemann Sum for \(f(x)\).

   (c) Compute the value of the Riemann Sum in part (b) for \(n = 10\).
2. Consider the sum

\[ \sum_{i=1}^{n} \left( \frac{i}{n} + 1 \right)^2 \frac{1}{n}. \]

(a) Explain why the sum can be interpreted as a Riemann sum for a function \( f(x) \) on the interval \([0, 1]\). That is, guess the function \( f(x) \), the partition, and the \( x_i^* \) selection.

(b) Do part (a) if the interval were \([1, 2]\).