Math 15200 Homework

Due Wednesday, January 16, 2019

1. Let $f(x) = \sin(x^2)$ and consider the partition

$$\mathcal{P} = \left\{0, \frac{1}{11}, \frac{2}{11}, \frac{3}{11}, \ldots, \frac{10}{11}, 1\right\}$$

of $[0, 1]$. Calculate the upper sum $U(f, \mathcal{P})$ and the lower sum $L(f, \mathcal{P})$.

2. Use Problem 1 to show that

$$\frac{1}{4} \leq \int_0^1 \sin(x^2)\, dx \leq \frac{4}{10}.$$