Quiz 5 Calculus 1 11/22/2011

Each problem is worth 5 points. Clear and complete justification is required for full credi

1. If you use a left-hand sum with $n = 4$ subdivisions to approximate $\int_1^5 \frac{1}{x}\,dx$, what are:

$\Delta x = \underline{1}$ $\frac{5-1}{4}$

$\overline{x}_1 = \underline{1}$

$\overline{x}_2 = \underline{2}$

$\overline{x}_3 = \underline{3}$

$\overline{x}_4 = \underline{4}$

Excellent

$f(\overline{x}_1) = \underline{1}$ u^2

$+$ $f(\overline{x}_2) = \underline{1/2}$ u^2

$+$ $f(\overline{x}_3) = \underline{1/3}$ u^2

$+$ $f(\overline{x}_4) = \underline{1/4}$ u^2

$$\sum_{k=1}^{4} f(\overline{x}_k)\cdot\Delta x = \boxed{\frac{25}{12}\,u^2}$$

2. If you use a right-hand sum with $n = 4$ subdivisions to approximate $\int_1^3 x^2\,dx$, what are:

$\Delta x = \dfrac{3-1}{4} = \dfrac{2}{4} = 1/2$

$\bar{x}_1 = 1.5$

$\bar{x}_2 = 2$

$\bar{x}_3 = 2.5$

$\bar{x}_4 = 3$

Well done

$f(\bar{x}_1) = 2.25$

$f(\bar{x}_2) = 4$

$f(\bar{x}_3) = 6.25$

$f(\bar{x}_4) = 9$

$\sum_{k=1}^{4} f(\bar{x}_k)\cdot\Delta x = 2.25(1/2) + 4(1/2) + 6.25(1/2) + 9(1/2) = 10.75$