Mathematics 122

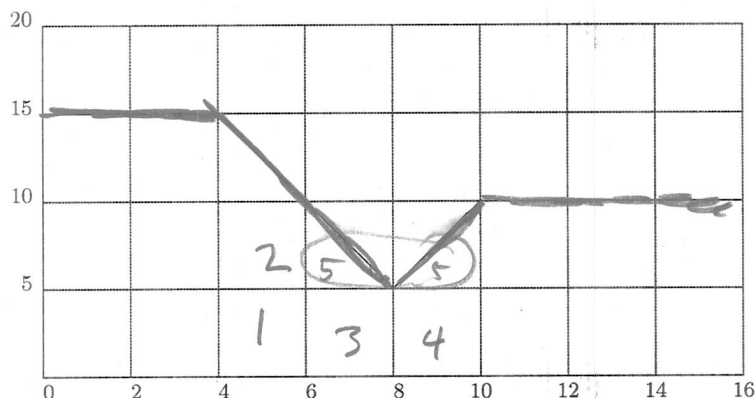Quiz #30   Name: _____ Key _____

You must show your work to get full credit.

FIGURE 1

(1) Figure 1 gives the graph of a function $y = f(x)$. Compute the average value of f between $x = 4$ and $x = 10$.

$$\text{Average} = \frac{1}{10-4} \int_4^{10} f(x)\,dx$$ Average Value = $\dfrac{55}{6} = 9.16666 \cdots$

$$= \frac{1}{6}(5.5)\text{boxes}$$

$$= \frac{1}{6}(5.5) \times 10 = \frac{55}{6} = 9.16666 \cdots$$

(2) Compute the antiderivatives of the following:

(a) $f(x) = 5x^3 + 3x^2 + 1$ $F(x) = \underline{\dfrac{5}{4}x^4 + x^3 + x}$

(b) $g(t) = 3\sqrt{t} = 3t^{\frac{1}{2}}$ $G(t) = \underline{2t^{3/2}}$

$$G(t) = 3\left(\frac{2}{3}\right)t^{\frac{3}{2}} = 2t^{\frac{3}{2}}$$

(c) $h(s) = \dfrac{3}{s^2} = 3s^{-2}$ $H(s) = \underline{-3s^{-1} = \dfrac{-3}{s}}$

$$H(s) = \frac{3s^{-1}}{-1}$$

I box
$= 2 \times 5$
$= 10$