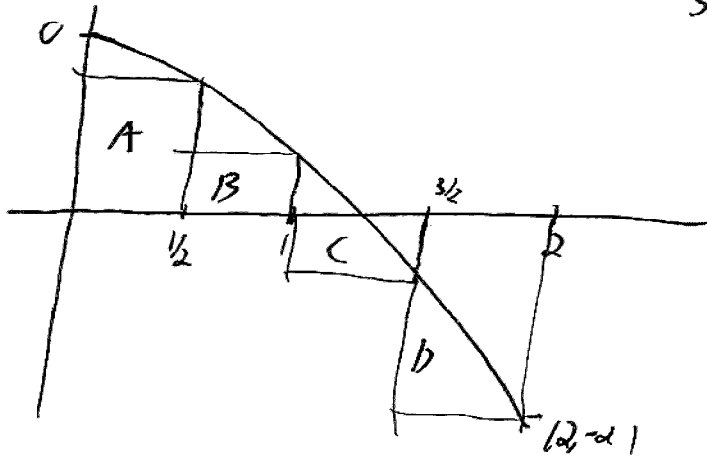


Name: SOLUTIONS

Quiz #11 - November 30, 2006

1. Evaluate the Riemann sum for $f(x) = 2 - x^2$, $0 \leq x \leq 2$ with four equal subintervals, taking sample points to be right endpoints. Explain, with the aid of a diagram, what the Riemann sum represents.



$$\begin{aligned} \text{sum} &= \frac{1}{2} (f(1/2) + f(1) + f(3/2) + f(2)) \\ &= \frac{1}{2} \left(\frac{7}{4} + 1 + -\frac{1}{4} + 2 \right) \\ &= \frac{1}{2} \left(\frac{1}{2} \right) = 1/4 \end{aligned}$$

It is the area of rectangles A + B minus rectangles C + D

2. Find the area above the x-axis interval $[-1, 2]$ and beneath the parabola $y = 8 - x^2$.

$$\begin{aligned} \int_{-1}^2 8 - x^2 dx &= \left(8x - \frac{1}{3}x^3 \right) \Big|_{-1}^2 \\ &= \left(16 - \frac{8}{3} \right) - \left(-8 + \frac{1}{3} \right) \\ &= 24 - 9/3 = \boxed{21} \end{aligned}$$

3. Evaluate the integral $\int_{-2}^3 x^2 + x dx$

~~3~~

$$\begin{aligned} &= \left. \frac{x^3}{3} + \frac{x^2}{2} \right|_{-2}^3 \\ &= \left(9 + \frac{9}{2} \right) - \left(-\frac{8}{3} + 2 \right) \\ &= \boxed{7 + 9/2 + 8/3} \end{aligned}$$