

Name: _____

Solution A

ID# _____

Sec.#: _____

1. Approximate the area between the graph of $f(x) = x + 2$ and the interval $[0, 8]$ using 4 rectangles.

$$n = 4$$

Divide the interval $[0, 8]$ into 4 equal subintervals

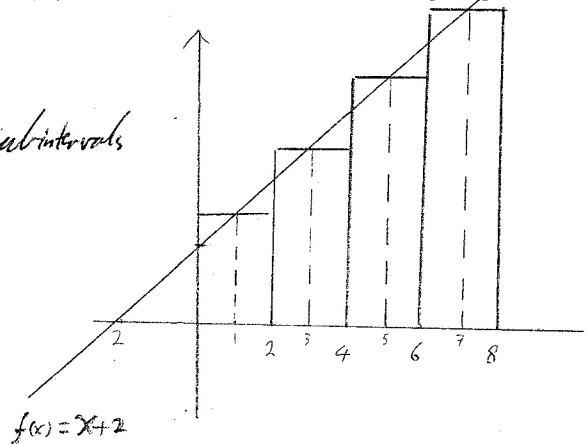
each of length $\frac{8}{4} = 2$

In each subinterval determine its midpoint

So, the midpoints are: 1, 3, 5, 7.

The approximated area is

$$\begin{aligned} A_4 &= 2[f(1) + f(3) + f(5) + f(7)] \\ &= 2[3 + 5 + 7 + 9] \\ &= 48 \end{aligned}$$



2. Integrate each of the following:

(a) $\int \left(\frac{7}{x^2} - \frac{5}{x} + 2e^{5x} \right) dx.$

$$= -\frac{7}{x} - 5 \ln|x| + \frac{2}{5} e^{5x} + C$$

(b) $\int \frac{dt}{\sec t}$

$$= \int \cos t \, dt = \sin t + C$$

(c) $\int 4x(2+x)^2 dx$

$$= \int 4x(4 + 4x + x^2) dx = \int (16x + 16x^2 + 4x^3) dx$$

$$= 8x^2 + \frac{16}{3}x^3 + x^4 + C$$