

8.1 Q^u1.

Solution.

The area of each strip is a rectangle of length 3 and width Δx

$$\text{Area of strip} = 3\Delta x.$$

The Riemann sum of approximation of the area of the region will be

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n 3\Delta x$$

and the integral will be

$$\int_0^5 3 dx$$

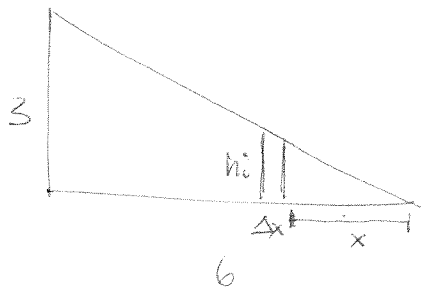
Comments

In this question, since the length of the rectangular strip is known there is no need to set up the equation for similar rectangles.

8.1 Qu2.

Solution.

Area of the strip is $h_i \Delta x$



Using similar triangles

$$\frac{h_i}{3} = \frac{x}{6}$$

$$\text{and } h_i = \frac{x}{2}$$

The Riemann Approx Sum

Approximation of the area of the triangle will be

$$\sum_{i=1}^n h_i \Delta x = \lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{x_i}{2} \Delta x.$$

And the integral is

$$\int_0^6 \frac{x}{2} dx.$$

Comments

In answering questions of this nature you should be mindful of which variables to use in setting up the equation using similar triangles.

$$\frac{h_i}{3} = \frac{x}{6}$$

and ~~not~~

$$\frac{h_i}{3} = \frac{6-x}{6}$$