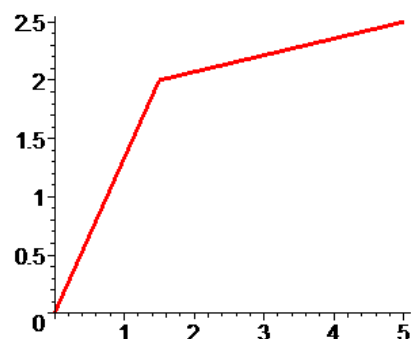


**TOPIC**

Mathematics – Section I – Question 2

**QUESTION**

Below is given the graph of a function  $f(x)$  for  $0 \leq x \leq 5$ . The value of  $\int_0^5 f(x)dx$  most nearly is



- (A) 6.250
- (B) 9.375
- (C) 12.50
- (D) 25.00

**HINT**

Use trapezoidal rule with unequal segments for a quick answer as the function is made of piecewise-continuous straight lines.

**SOLUTION**

The trapezoidal rule formula for an integral is given by

$$\int_a^b f(x)dx \approx \frac{1}{2}(b-a)(f(a) + f(b))$$

$\int_0^5 f(x)dx$  is the area under the curve.

$$\begin{aligned}\int_0^5 f(x)dx &= \int_0^{1.5} f(x)dx + \int_{1.5}^5 f(x)dx \\ &= \frac{1}{2}(1.5 - 0)(0 + 2) + \frac{1}{2}(5 - 1.5)(2 + 2.5) \\ &= 1.5 + 7.875 \\ &= 9.375\end{aligned}$$

**ANSWER**

(B)

**CONTRIBUTOR**

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