

# Trapezoidal approximation method worksheet

$$\int_a^b f(x) dx = \int \quad \quad \quad dx$$

Sketch **graph** of function

Lower bound:  $a =$

Upper bound:  $b =$

Number of subintervals:  $N =$

Width of each subinterval:  $\Delta x = \frac{b-a}{N} =$

Subinterval	Left evaluation point	Left height	Right evaluation point	Right height	Average height
$n$	$x_i^L$	$f(x_i^L)$	$x_i^R$	$f(x_i^R)$	$\frac{f(x_i^L) + f(x_i^R)}{2}$
1	$x_1^L =$		$x_1^R =$		
2	$x_2^L =$		$x_2^R =$		
3	$x_3^L =$		$x_3^R =$		
4	$x_4^L =$		$x_4^R =$		
5	$x_5^L =$		$x_5^R =$		
6	$x_6^L =$		$x_6^R =$		
7	$x_7^L =$		$x_7^R =$		
8	$x_8^L =$		$x_8^R =$		
9	$x_9^L =$		$x_9^R =$		
10	$x_{10}^L =$		$x_{10}^R =$		
		$\Sigma =$		$\Sigma =$	

Area:

$$\begin{aligned} \int_a^b f(x) dx &\approx h_{\text{AVG},1}\Delta x + h_{\text{AVG},2}\Delta x + \cdots + h_{\text{AVG},N}\Delta x \\ &= (h_{\text{AVG},1} + h_{\text{AVG},2} + \cdots + h_{\text{AVG},N})\Delta x \\ &= \end{aligned}$$