Solution.

Our function is continuous on the closed interval $[\mathbf{0}, \boldsymbol{\pi}]$**.** Then there exists c in the closed interval $[\mathbf{0}, \boldsymbol{\pi}]$ such that

$$\int_0^{\pi} f(x)dx = f(c)(b-a)$$

Then we have

$$\int_0^{\pi} \sin x \, dx = \sin c \, (\pi - 0)$$

Find the value of the integral

$$\int_0^{\pi} \sin x \, dx = -\cos x|_0^{\pi} = \cos 0 - \cos \pi = 1 - (-1) = 2$$

Then

$$\frac{2}{\pi} = \sin c$$

$$c = \arcsin \frac{2}{\pi}$$

Answer:

$$c = \arcsin \frac{2}{\pi}$$