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2018 10

A trigonometric function  $f(x)$  satisfies the condition  $\int_0^{\pi} f(x) dx \neq \int_{\pi}^{2\pi} f(x) dx$ .

Which function could  $f(x)$  be?

- A.  $f(x) = \sin(2x)$     B.  $f(x) = \cos(2x)$     C.  $f(x) = \sin\left(\frac{x}{2}\right)$     D.  $f(x) = \cos\left(\frac{x}{2}\right)$

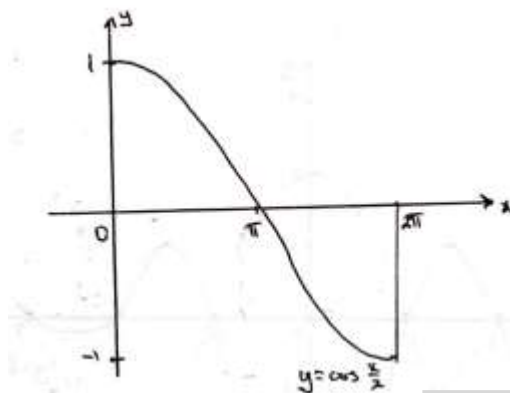
D

Consider the graphs of each of the four options.

This is the graph of  $y = \cos \frac{x}{2}$ , between 0 and  $2\pi$ .

$$\text{As } \int_0^{\pi} \cos \frac{x}{2} dx = - \int_{\pi}^{2\pi} \cos \frac{x}{2} dx,$$

$$\text{then } \int_0^{\pi} \cos \frac{x}{2} dx \neq \int_{\pi}^{2\pi} \cos \frac{x}{2} dx.$$



State Mean:  
**0.45**

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