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**2015 7** What is the value of  $k$  such that  $\int_0^k \frac{1}{\sqrt{4-x^2}} dx = \frac{\pi}{3}$ ? **1**

(A) 1

(B)  $\sqrt{3}$ 

(C) 2

(D)  $2\sqrt{3}$ **B**

$$\int_0^k \frac{1}{\sqrt{4-x^2}} dx = \frac{\pi}{3}$$

$$\left[ \sin^{-1} \frac{x}{2} \right]_0^k = \frac{\pi}{3}$$

$$\sin^{-1} \frac{k}{2} - \sin^{-1} 0 = \frac{\pi}{3}$$

$$\sin^{-1} \frac{k}{2} = \frac{\pi}{3}$$

$$\frac{k}{2} = \sin \frac{\pi}{3}$$

$$\frac{k}{2} = \frac{\sqrt{3}}{2}$$

$$k = \sqrt{3}$$

State Mean: <b>0.9</b>
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\* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by BOSTES.