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**2014 2** Which expression is equal to  $\cos x - \sin x$ ? **1**

(A)  $\sqrt{2} \cos\left(x + \frac{\pi}{4}\right)$  (B)  $\sqrt{2} \cos\left(x - \frac{\pi}{4}\right)$

(C)  $2 \cos\left(x + \frac{\pi}{4}\right)$  (D)  $2 \cos\left(x + \frac{\pi}{4}\right)$

**A**

$$R = \sqrt{1^2 + (-1)^2} = \sqrt{2}$$

$$\cos x - \sin x = \sqrt{2} \cos(x + \alpha)$$

$$\tan \alpha = \frac{1}{\sqrt{2}}$$

$$\alpha = \frac{\pi}{4} \qquad \therefore \sqrt{2} \cos\left(x + \frac{\pi}{4}\right)$$

State Mean:  
**0.79**

\* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by BOSTES.