

Task. If $\sin d = 0.25$ and $\sin k = 0.75$, which of the following is the value of $\cos d + \cos k$?

- A. 1.68
- B. 1.59
- C. 1.61
- D. 1.63

Solution. Since

$$\sin^2 x + \cos^2 x = 1$$

for all x , we have that

$$\cos x = \pm\sqrt{1 - \sin^2 x}.$$

Since all variants A.-D. are greater 1, assume that $\cos d > 0$ and $\cos k > 0$.

Then

$$\cos d = \sqrt{1 - \sin^2 d} = \sqrt{1 - 0.25^2} = \sqrt{0.9375} \approx 0.96825,$$

and

$$\cos k = \sqrt{1 - \sin^2 k} = \sqrt{1 - 0.75^2} = \sqrt{0.4375} \approx 0.66144.$$

Therefore

$$\cos d + \cos k \approx 0.96825 + 0.66144 = 1.6297 \approx 1.63.$$

Answer. D) $\cos d + \cos k \approx 1.63$.