

Amplitude-Phase Form of a Sinusoid

Quiz: Amplitude-Phase Form of a Sinusoid.

Put $\cos(\omega t) + \sqrt{3}\sin(\omega t)$ into amplitude-phase form $A \cos(\omega t - \phi)$?

Choices:

- a) $2 \cos(\omega t - \frac{\pi}{4})$
- b) $\sqrt{3} \cos(\omega(t - \frac{\pi}{3}))$
- c) $2 \cos(\omega(t - \frac{\pi}{3}))$
- d) $2 \cos(\omega t - \frac{\pi}{3})$
- e) $\sqrt{3} \cos(\omega t - \frac{\pi}{3})$
- f) $\sqrt{3} \cos(\omega t - \frac{\pi}{4})$

Answer:

The answer is (d) because $A = \sqrt{1^2 + \sqrt{3}^2} = 2$, and $\phi = \tan^{-1} \frac{\sqrt{3}}{1} = \frac{\pi}{3}$.

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