

Quiz: Cosines with Common Frequencies

Quiz: What is the base (fundamental) frequency of the function

$$f(t) = \cos(t) + \cos(2t) + \cos(3t)?$$

Choices:

- a) 1
- b) 2
- c) 3
- d) 6
- e) there is no base frequency.

Answer: (a): Base frequency $\omega = 1$.

The smallest common period of $\cos(t)$, $\cos(2t)$ and $\cos(3t)$ is 2π . Thus, $f(t) = \cos(t) + \cos(2t) + \cos(3t)$ has minimal period $P = 2\pi$, and therefore its base frequency ω is $\frac{2\pi}{P} = 1$.

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