

$$F_A = F_m \cos(\theta) \cdot \cos(\omega t)$$

$$F_B = F_m \cos(\theta - 2\pi/3) \cdot \cos(\omega t - 2\pi/3)$$

$$F_C = F_m \cos(\theta - 4\pi/3) \cdot \cos(\omega t - 4\pi/3)$$

$$F_{\text{total}} = F_A + F_B + F_C = ?$$

$$\cos(\alpha) \cdot \cos(\beta) = \frac{1}{2} \cos(\alpha - \beta) + \frac{1}{2} \cos(\alpha + \beta)$$

$$F_{\text{total}} = F_m \left[\begin{array}{l} \frac{1}{2} \cos(\theta - \omega t) + \frac{1}{2} \cos(\theta + \omega t) \\ \frac{1}{2} \cos(\theta - 2\pi/3 - \omega t + 2\pi/3) + \frac{1}{2} \cos(\theta + \omega t - 4\pi/3) \\ \frac{1}{2} \cos(\theta - 4\pi/3 - \omega t + 4\pi/3) + \frac{1}{2} \cos(\theta + \omega t - 8\pi/3) \end{array} \right]$$

all adds up.

$$\frac{-8\pi}{3} + 2\pi = \frac{-2\pi}{3}$$

$$F_{\text{total}} = F_m \left[\frac{3}{2} \cos(\theta - \omega t) + \frac{1}{2} \cos(\theta + \omega t) + \frac{1}{2} \cos(\theta + \omega t - 4\pi/3) + \frac{1}{2} \cos(\theta + \omega t - 2\pi/3) \right]$$



$$F_{\text{total}} = \frac{3}{2} F_m \cos(\theta - \omega t)$$