

PPP

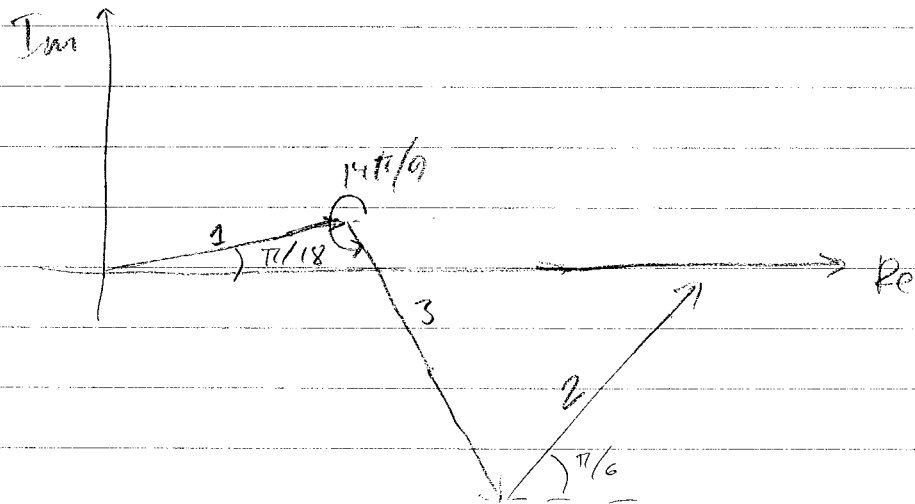
5-5

$$E = \sin\left(\frac{\pi}{18} - \omega t\right) + 3\cos\left(\frac{5\pi}{9} - \omega t\right) + 2\sin\left(\frac{\pi}{6} - \omega t\right)$$

$$\left\{ \cos x = \sin(x + \pi) \right\}$$

$$= \sin\left(\frac{\pi}{18} - \omega t\right) + 3\sin\left(\frac{14\pi}{9} - \omega t\right) + 2\sin\left(\frac{\pi}{6} - \omega t\right)$$

Addera fasvinklar!



$$E = \operatorname{Im}\left(e^{i\left(\frac{\pi}{18} - \omega t\right)} + 3e^{i\left(\frac{14\pi}{9} - \omega t\right)} + 2e^{i\left(\frac{\pi}{6} - \omega t\right)}\right)$$

$$= \operatorname{Im}\left[\left(e^{i\frac{\pi}{18}} + 3e^{i\frac{14\pi}{9}} + 2e^{i\frac{\pi}{6}}\right)e^{-i\omega t}\right]$$

$$= \operatorname{Im}\left[E_0 e^{i(\alpha - \omega t)}\right]$$

$$E_0^2 = \left(\sum_{i=1}^3 E_{0i} \sin \alpha_i\right)^2 + \left(\sum_{i=1}^3 E_{0i} \cos \alpha_i\right)^2$$

$$= \left(\sin \frac{\pi}{18} + 3\sin \frac{14\pi}{9} + 2\sin \frac{\pi}{6}\right)^2 + \left(\cos \frac{\pi}{18} + 3\cos \frac{14\pi}{9} + 2\cos \frac{\pi}{6}\right)^2$$

$$\Rightarrow E_0 = 0,695$$

$$\tan \alpha = \frac{\sum E_{0i} \sin \alpha_i}{\sum E_{0i} \cos \alpha_i}$$