Answer on Question #82579 – Math – Trigonometry

Question

Voltage $V1 = 3 * \sin(wt), V2 = \cos(wt), V3 = V1 + V2$

Voltage = V1=3sin(wt) V2=cos(wt) V3=v1+v2
Find the expression in sine waveform v3=Rsin(wt+phase angle)
verify the resultant voltage is in the same frequency as v1 and v2

W= Waveform

Solution

$$V3 = 3 * \sin(wt) + \cos(wt) = \sqrt{10}\left(\frac{3}{\sqrt{10}}\sin(wt) + \frac{1}{\sqrt{10}}\cos(wt)\right)$$

$$= \sqrt{10}\,(\sin\left(wt + arcsin\left(\frac{\sqrt{10}}{10}\right)\right)$$

Answer: $\sqrt{10}\,(\sin\left(wt + arcsin\left(\frac{\sqrt{10}}{10}\right)\right)$.