

Bukti: Misalnya pada $t = 1 \text{ sec}$, $t_c = 0,5 t/t$
 $y(t) = A \sin [2\pi (x(t) + 0,5) \cdot 1]$

Masukan $\longrightarrow$ Keluaran

$$x_1(t) = 0,5 (\text{Hz}) \longrightarrow y_1(t) = A \sin 2\pi = 0$$

$$x_2(t) = -0,75 (\text{Hz}) \longrightarrow y_2(t) = A \sin \left(-\frac{\pi}{2}\right) = -A$$

$$\alpha_1 = 4 \quad \alpha_2 = 2 \longrightarrow$$

Kombinasi Linier
Isyarat masukan

$$\begin{aligned} x(t) &= \alpha_1 x_1(t) + \alpha_2 x_2(t) \\ &= 4(0,5) + 2(-0,75) \\ &= 2 - 1,5 = 0,5 \end{aligned}$$

Kombinasi Linier
Isyarat Keluaran

$$\begin{aligned} \alpha_1 y_1(t) + \alpha_2 y_2(t) \\ = 4 \cdot 0 + 2(-A) = \underline{\underline{-2A}} \end{aligned}$$

$$\begin{aligned} y(t) &= A \sin [2\pi (0,5 + 0,5)] \\ &= A \sin 2\pi = 0 \\ &\neq \alpha_1 y_1(t) + \alpha_2 y_2(t) \end{aligned}$$

Terbukti bahwa
Modulator Frekuensi adalah TAK LINIER (q.e.d)