

Tarea

$$V_{Rms} = \bar{P} = \frac{1}{T} \int |A \sin(\omega_0 t)|^2 dt$$

$$\left\{ \begin{array}{l} Rms \rightarrow P_x \\ \rightarrow I_{max}, V_{max} \end{array} \right. \quad \frac{A}{\sqrt{2}}$$

$$\omega_0 = \frac{2\pi}{T}$$

$$|A \sin(\omega_0 t)|^2 = A^2 \sin^2(\omega_0 t)$$

$$\sin^2(\omega_0 t) = \frac{1 - \cos(2\omega_0 t)}{2}$$

$$V_{Rms}^2 = \frac{1}{T} \int_0^T A^2 \cdot \frac{1 - \cos(2\omega_0 t)}{2} dt$$

$$V_{Rms}^2 = \frac{A^2}{2T} \int_0^T [1 - \cos(2\omega_0 t)] dt$$

$$\int_0^T 1 dt = T$$

$$\int_0^T \cos(2\omega_0 t) dt = \frac{\sin(2\omega_0 T)}{2\omega_0} - \frac{\sin(0)}{2\omega_0} = 0$$

$$V_{Rms}^2 = A^2/2T (T - 0) = A^2/2$$

$$V_{rms} = \frac{A}{\sqrt{2}}$$

Relacion con el valor maximo

$$A = V_{max}$$

$$V_{rms} = \frac{V_{max}}{\sqrt{2}}$$

de igual manera

$$I_{rms} = \frac{I_{max}}{\sqrt{2}}$$

$$V_{rms} = V_{pico} / \sqrt{2}$$