

$$i = \sqrt{6} - \sqrt{6} \cos(\omega t) = \sqrt{6} (1 - \cos(\omega t))$$

$$i^2 = 6 (1 - \cos(\omega t))^2$$

$$A = \frac{1}{T} \int_0^T i^2 dt = \frac{6}{T} \int_0^T [1 - 2\cos(\omega t) + \cos^2(\omega t)] dt$$

$$= \frac{6}{T} \int_0^T dt - \frac{12}{T} \int_0^T \cos(\omega t) dt + \frac{6}{T} \int_0^T \cos^2(\omega t) dt$$

$$= \frac{6}{T} \cdot T - \frac{12}{T} \cdot 0 + 6 \cdot \frac{1}{2}$$

↳ WE KNOW FOR A COS

$$I_{RMS} = \frac{I_M}{\sqrt{2}} \Rightarrow I_{RMS}^2 = \frac{I_M^2}{2}$$

$$I_{RMS}^2 = \frac{I_M^2}{T} \int_0^T \cos^2(\omega t) dt$$

$$\Rightarrow \frac{1}{T} \int_0^T \cos^2(\omega t) dt = \frac{1}{2}$$

$$A = 6 + \frac{6}{2} = 9$$

$$I_{RMS} = \sqrt{A} \Rightarrow \boxed{I_{RMS} = 3A}$$