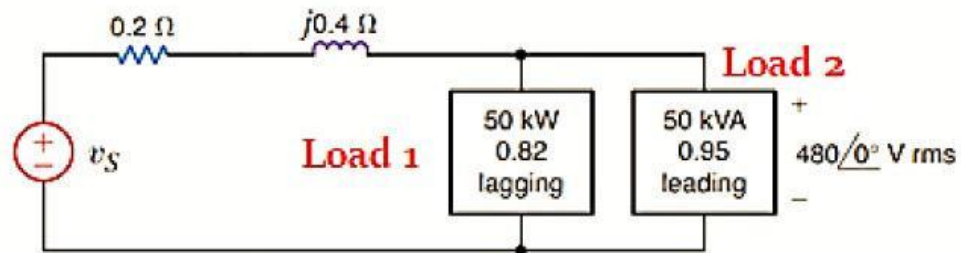


|                 |                         |        |
|-----------------|-------------------------|--------|
| แบบฝึกหัดที่ 24 | เรื่อง Complex Power(3) |        |
| รหัส 30104-1003 | วิชา วงจรไฟฟ้า 2        |        |
| ชื่อ-สกุล       | ชั้น                    | เลขที่ |

Find the power factor of the source and  $v_s(t)$  in Fig. if  $f = 60 \text{ Hz}$ .



วิธีทำ

-ที่โหลด 1

$$S_1 = P_1 \boxed{\phantom{00}} \boxed{\phantom{00}} = \boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}}$$

$$= \boxed{\phantom{00}} \boxed{\phantom{00}}$$

$$\theta_{S1} = \boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}} = \boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}}$$

$$= \boxed{\phantom{00}}^\circ$$

ดังนั้น  $S_1 = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}}$

หาคะแสที่โหลด 1 จากสูตร

$$I_1^* = \boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}} = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ$$

$$= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ$$

ดังนั้น  $I_1 = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}}$

-ที่โหลด 2

$$\theta_{S2} = \boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}} = \boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}}$$

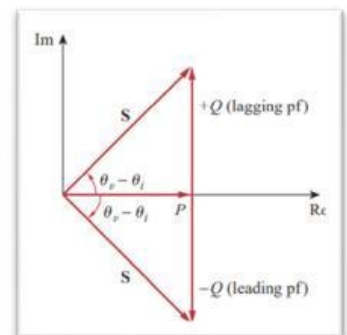
$$= \boxed{\phantom{00}}^\circ$$

ดังนั้น  $S_2 = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}}$

หาคะแสที่โหลด 2 จากสูตร

$$I_2^* = \boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}} = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ$$

$$= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ$$



ดังนั้น

$$I_2 = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}}$$

หากระแสไฟฟ้าที่จ่ายไหลดทั้ง 2 จากสูตร

$$\begin{aligned} I_T &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \\ &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \end{aligned}$$

หาแรงดันไฟฟ้าที่สายจากสูตร

$$\begin{aligned} V_{Line} &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} I_T = (\boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}}) \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \\ &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \\ &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \end{aligned}$$

หาแรงดันไฟฟ้าที่แหล่งจ่ายจากสูตร

$$\begin{aligned} V_S &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} V_L = (\boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}}) \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \\ &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \end{aligned}$$

แปลงค่าเป็นโวลต์

$$\begin{aligned} \omega &= 2\pi \boxed{\phantom{00}} \boxed{\phantom{00}} = \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \\ &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} \end{aligned}$$

ดังนั้น

$$\begin{aligned} v_{S(t)} &= \sqrt{2} \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} (\boxed{\phantom{00}} t + \theta_{V_S}^\circ) (\text{เปลี่ยน } V_{rms} \text{ เป็น } V_m) \\ &= \sqrt{2} \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} (\boxed{\phantom{00}} t + \boxed{\phantom{00}}^\circ) \\ &= \boxed{\phantom{00}} \angle \boxed{\phantom{00}}^\circ \boxed{\phantom{00}} (\boxed{\phantom{00}} t + \boxed{\phantom{00}}^\circ) \quad \text{Ans.} \end{aligned}$$

หาตัวประกอบกำลังไฟฟ้าที่แหล่งจ่ายจากสูตร

$$\begin{aligned} pf_S &= \cos(\theta_{\boxed{\phantom{00}}} - \theta_{\boxed{\phantom{00}}}) \\ &= \cos(\boxed{\phantom{00}} - \boxed{\phantom{00}}) \\ &= \boxed{\phantom{00}} \quad \text{Ans.} \end{aligned}$$