

A/H/P-1 - CIRCUIT ANALYSIS

URBAN
EDGE

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$$1) \quad \frac{V_1 - 50}{5} + \frac{V_1 - V_2}{10} + \frac{V_3 - V_2}{6} + \frac{V_2 - V_3}{6} + \frac{V_3 - V_1}{6} + \frac{V_3 - 52}{8} = 0$$

$$\frac{V_2 - V_1}{10} + \frac{V_2 - V_3}{6} - \frac{V_1 - 50}{10} = 0 \quad \text{--- (2)}$$

$$V_1 = 50.96$$

$$V_2 = 51.05$$

$$V_3 = 50.5$$

$$V_1 - \frac{5}{6} V_2 - \frac{1}{6} V_3 = 0 \quad \text{--- (1)}$$

$$\frac{V_1 - 50}{5} + \frac{V_1 - V_2}{10} + \frac{V_3 - V_2}{6} + \frac{V_3 - 52}{8} = 0 \quad \text{--- (2)}$$

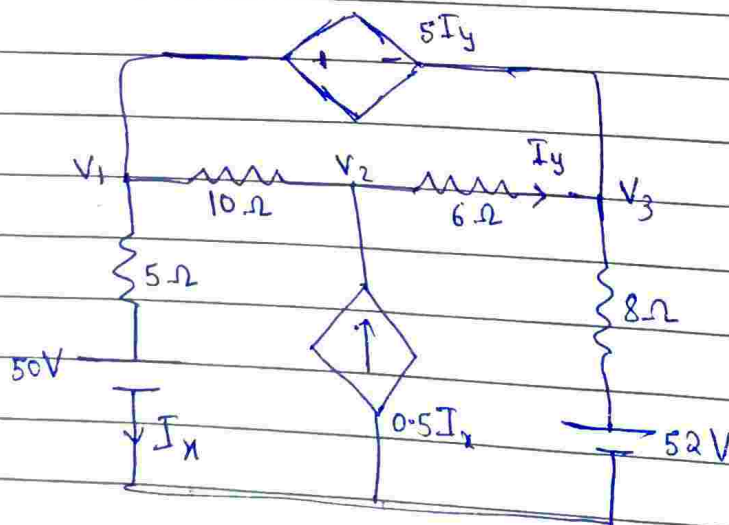
$$\frac{V_2 - V_1}{10} + \frac{V_2 - V_3}{6} - \frac{V_1 - 50}{10} = 0 \quad \text{--- (3)}$$

Solving ①, ②, ③

$$V_1 = 51.5 \text{ V}$$

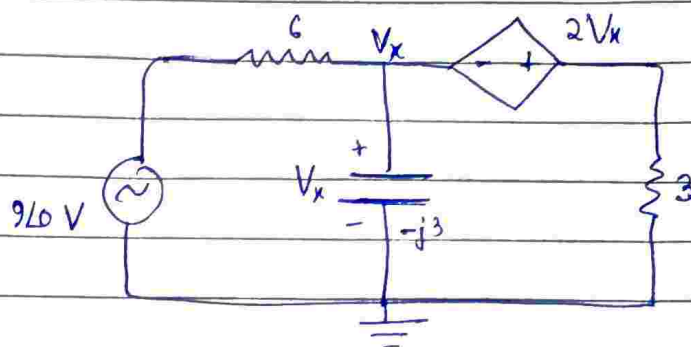
$$V_2 = 51.62 \text{ V}$$

$$V_3 = 50.81 \text{ V}$$



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2)

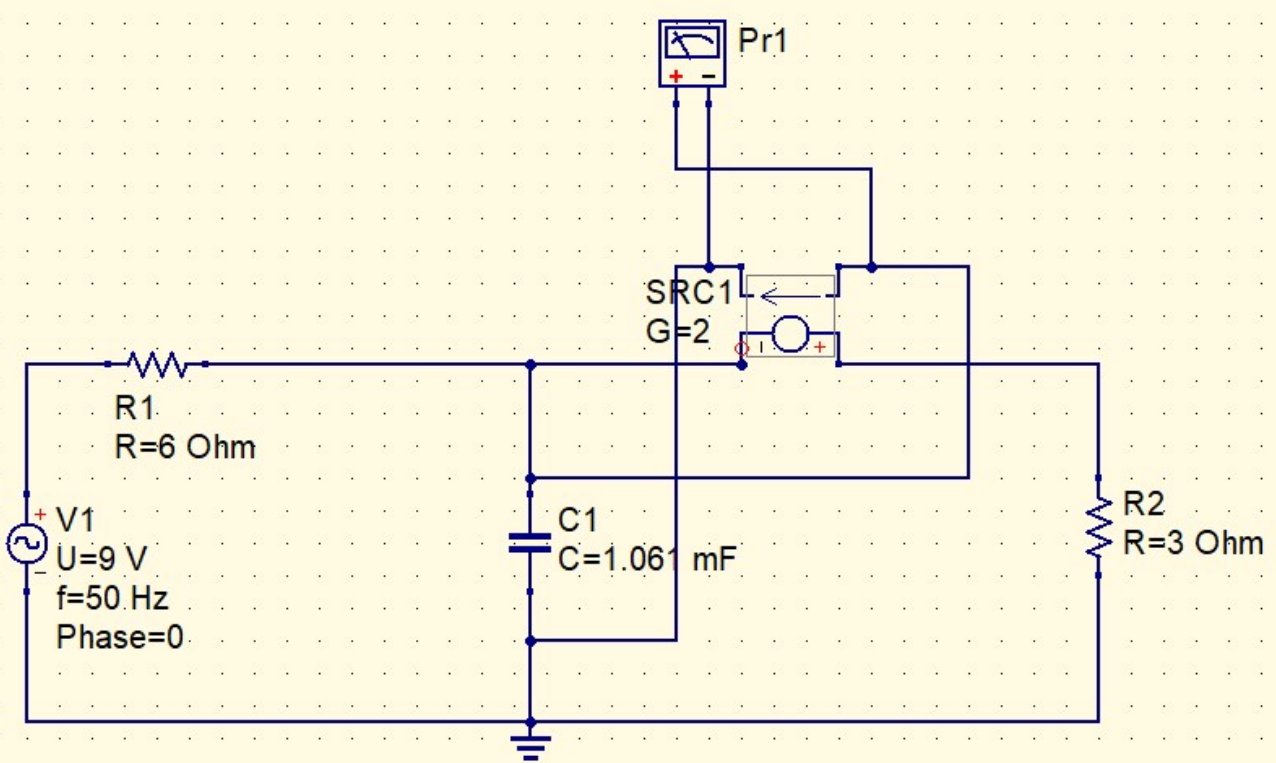
At V_x

$$\frac{V_x - 9\angle 0}{6\angle 0} + \frac{V_x}{3\angle -90} + \frac{V_x + 2V_x}{3\angle 0} = 0$$

$$V_x = \frac{9\angle 0}{6\angle 0} = 1.236 \angle -15.94^\circ \text{ V}$$

$$\left(\frac{1}{6\angle 0} + \frac{1}{3\angle -90} + \frac{3}{3\angle 0} \right)$$

[illegible]



ac simulation

AC1
 Type=lin
 Start=50 Hz
 Stop=50 Hz
 Points=2

acfrequency	Pr1.v
50	1.24 / -15.9°
50	1.24 / -15.9°