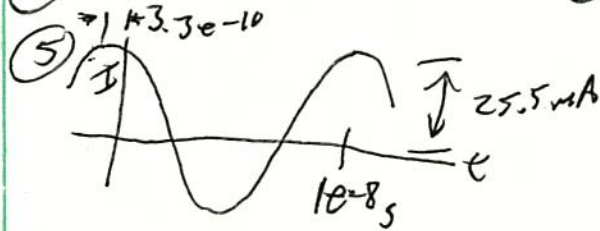


(1) ~~$2.5 + j4.73$~~ A
 $4.89 + j1.04$ A

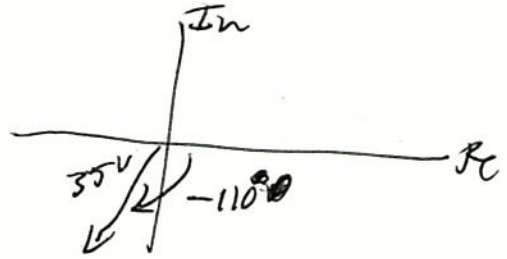
(2) $19.8 \cos(88000t - 20^\circ)$ V

(3) $14.1 \angle 40^\circ$ kV

(4) $12.4 \angle -14.04^\circ$ A



(6)

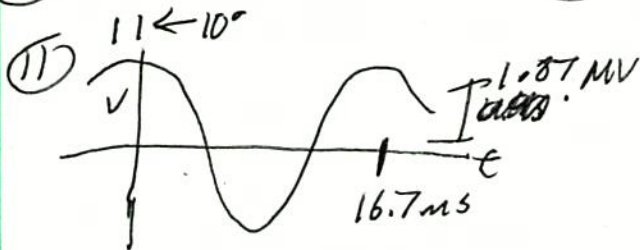


(7) $12 - j20.8$ A

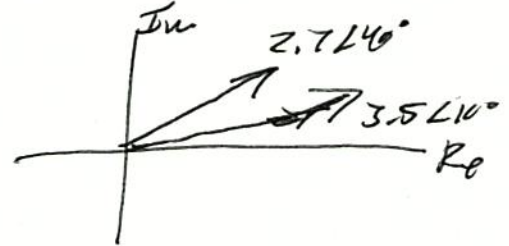
(8) $42.4 \cos(314t)$ V

(9) $13.97 + j2.2$ kV

(10) $42.4 \angle 45^\circ$ A



(12)



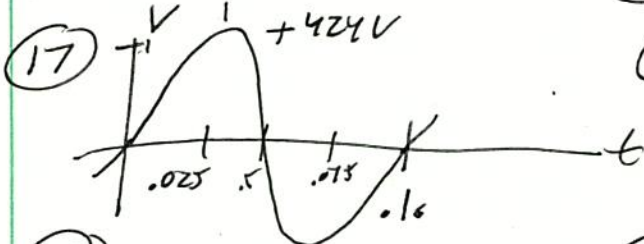
(13) $-j16$ A

(14)

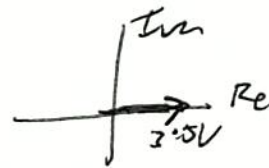
$142.1 \cos(2513t)$ V

(15) $141.4 \angle -90^\circ$ kV

(16) $5 \angle 90^\circ$ V



(18)

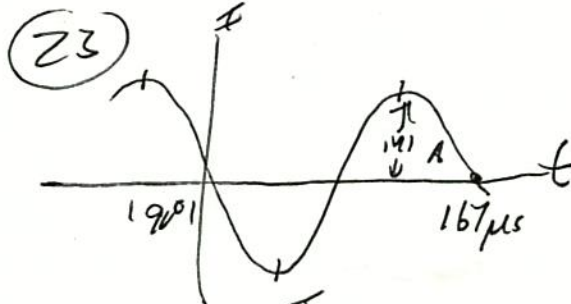


(19) 52 MV

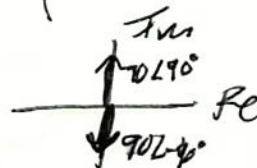
(20) $105.4 \cos(15708t + 108^\circ)$ V

(21) $-12 + j37$ V
 $f = 159 \text{ MHz}$

(22) $30000 \angle 89.98^\circ$ kA



(24)



Ex 1 Node-voltage method

$$\frac{V_1 - V_3}{8k} + \frac{V_1}{6k} + \frac{V_1}{14k} = 0$$

$$V_1 = \frac{V_3}{8k} \cdot \left(\frac{1}{8k} + \frac{1}{6k} + \frac{1}{14k} \right)^{-1} = 4.54 \angle 110^\circ \text{ kV}$$

$$I = \frac{V_1}{14k\Omega} = \frac{4.54 \angle 110^\circ \text{ kV}}{14k\Omega} = 0.324 \angle 110^\circ \text{ A}$$

Ex 2 Mesh-Current Method

$$I_1 = I_5 = \frac{7.1}{\sqrt{2}} \angle 10^\circ = 5 \angle 10^\circ \text{ A}$$

$$V_3 = 80 \angle -45^\circ \text{ V}$$

$$V_5 - 5 \cdot (I_2 - I_1) - 10(I_2 - I_3) = 0$$

$$10(I_3 - I_2) + 2(I_3 - I_1) + 12(I_3) = 0$$

$$I_2 = \frac{+V_3 + 5I_1 + 10I_3}{15} = \left(\frac{6.43 \angle -32.8^\circ}{15} \right) + 0.666 \cdot I_3$$

$$24I_3 - 2I_1 - 10I_2 = 0$$

$$I_3 = 2(5 \angle 10^\circ \text{ A})$$

$$24I_3 - 2(5 \angle 10^\circ \text{ A}) - 10 \left(\frac{6.43 \angle -32.8^\circ}{15} + 0.666 I_3 \right) = 0$$

$$I_3 = \frac{2 \cdot 5 \angle 10^\circ \text{ A} + 10 \cdot \frac{6.43 \angle -32.8^\circ}{15}}{24 + 0.666} = \frac{10 \angle 10^\circ \text{ A} + 4.28 \angle -32.8^\circ}{24.666} = 2.91 \angle -27.38^\circ \text{ A}$$

$$I_2 = \frac{8.36 \angle -31.51^\circ}{8.36 \angle -31.51^\circ} = 1 \angle -31.51^\circ \text{ A}$$

$$V_1 = 10 \cdot (I_2 - I_3) = 10 \cdot (1 \angle -31.51^\circ - 2.91 \angle -27.37^\circ) = 54.6 \angle -33.76^\circ \text{ V}$$

$$v_1(t) = 77.2 \cos(1256t - 33.76^\circ) \text{ V}$$