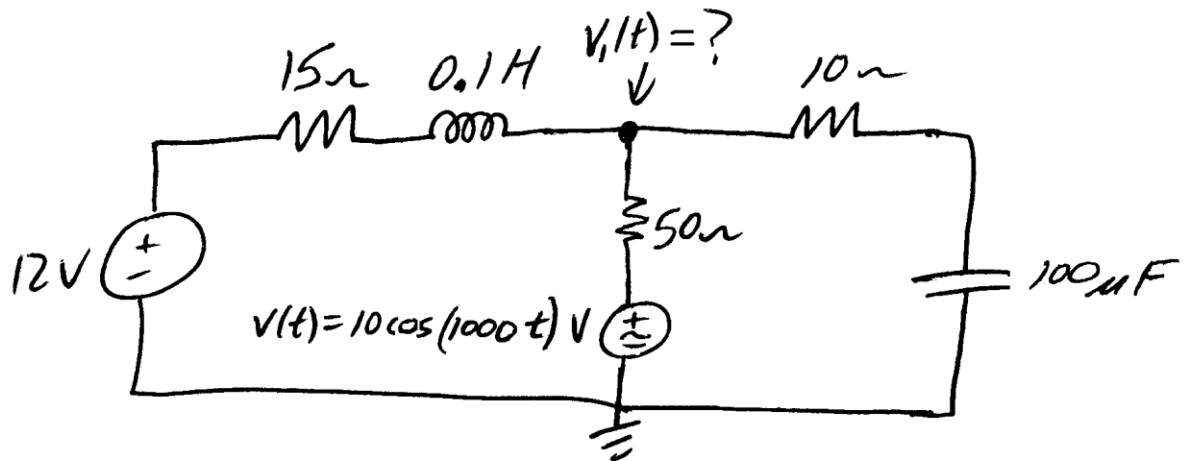
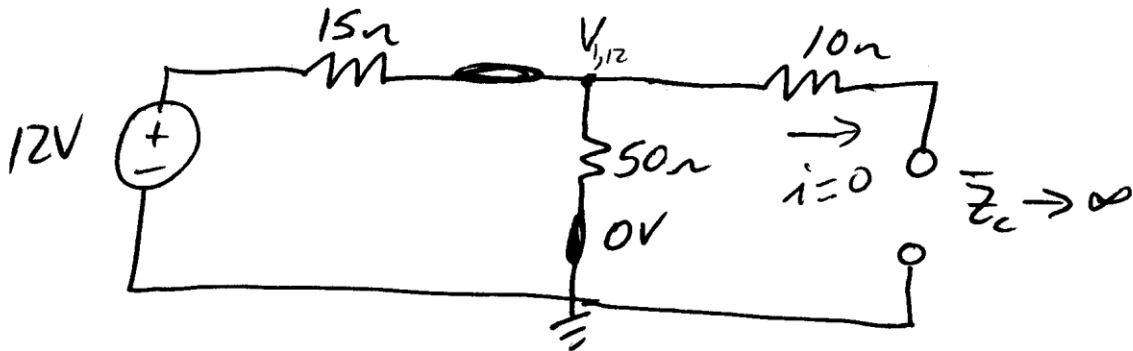


Determine the node voltage $v_1(t)$ using the Principle of Superposition.

ex.

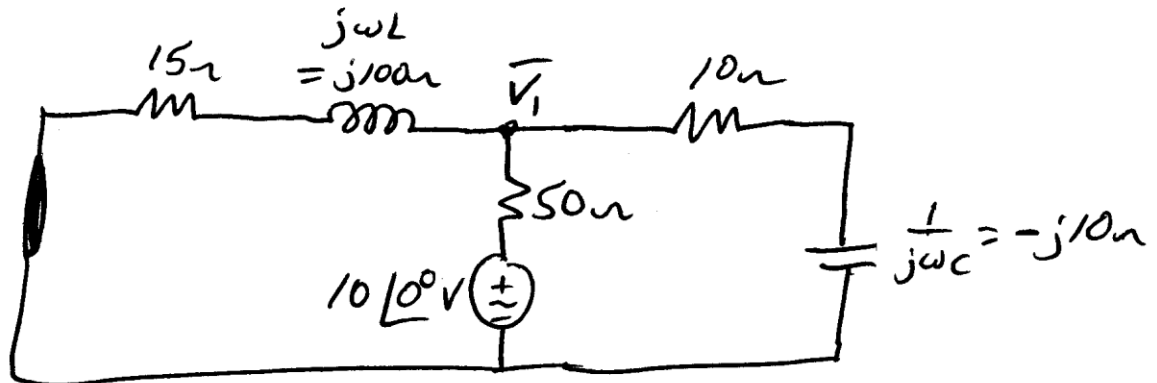


① 12V Source (remember S.S. conditions/ $\omega = 0$)



$$V_{1,12} = 12 \left(\frac{50}{15+50} \right) = \underline{9.2307 V}$$

② Sinusoidal Source ($\omega = 1000 \text{ rad/s}$)



$$\bar{V}_1 = 10 \angle 0^\circ V \frac{(15+j100) // (10-j10)}{50 + (15+j100) // (10-j10)}$$

ex. cont.

$$\bar{V}_1 = (10 \angle 0^\circ) \frac{12.06 - j9.42}{50 + (12.06 - j9.42)} = 2.44 \angle -29.4^\circ \text{ V}$$

$$(3) V_1(t) = V_{1,DC} + \text{Re} \left\{ \bar{V}_1 e^{j1000t} \right\}$$

$$\underline{\underline{V_1(t) = 9.2307 + 2.44 \cos(1000t - 29.4^\circ) \text{ V}}}$$