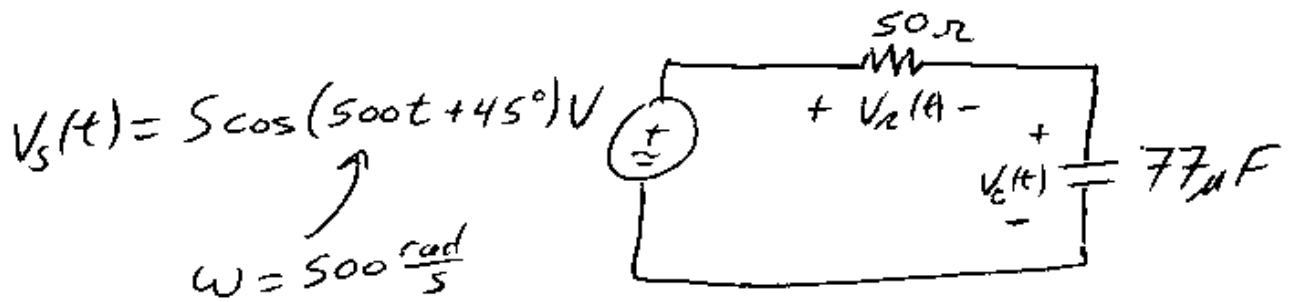
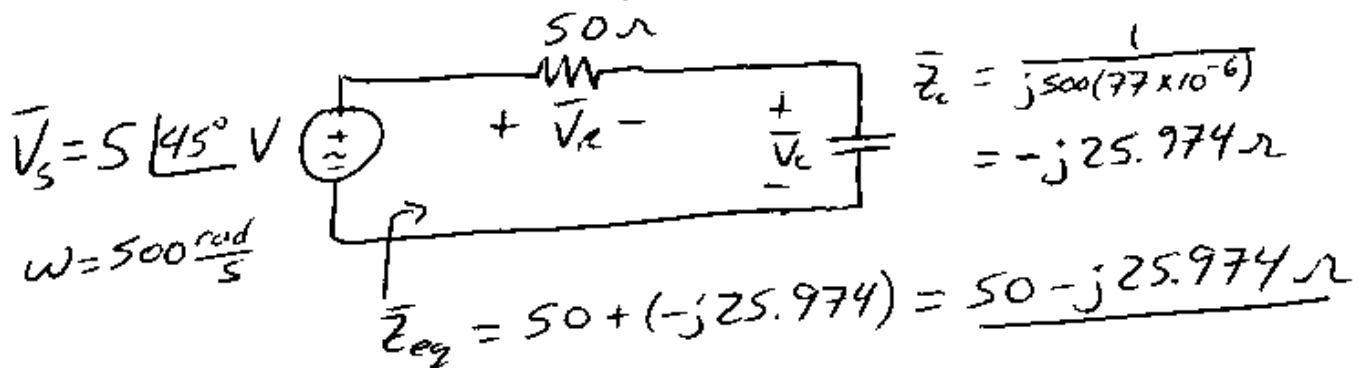


ex. Determine $v_R(t)$ and $v_C(t)$ for the circuit.



Phasor equivalent circuit



By voltage division

$$\bar{v}_R = \bar{v}_S \frac{R}{\bar{z}_{eq}} = (5 \angle 45^\circ) \frac{50}{50 - j25.974}$$

$$\bar{v}_R = 4.437 \angle 72.45^\circ \text{ V}$$

$$\bar{v}_C = \bar{v}_S \frac{\bar{z}_C}{\bar{z}_{eq}} = (5 \angle 45^\circ) \frac{-j25.974}{50 - j25.974} = 2.305 \angle -17.55^\circ \text{ V}$$

convert \bar{v}_R & \bar{v}_C to time-domain

$$v_R(t) = \text{Re}\{\bar{v}_R e^{j500t}\} = 4.437 \cos(500t + 72.45^\circ) \text{ V}$$

$$v_C(t) = \text{Re}\{\bar{v}_C e^{j500t}\} = 2.305 \cos(500t - 17.55^\circ) \text{ V}$$

Phasor Diagram

