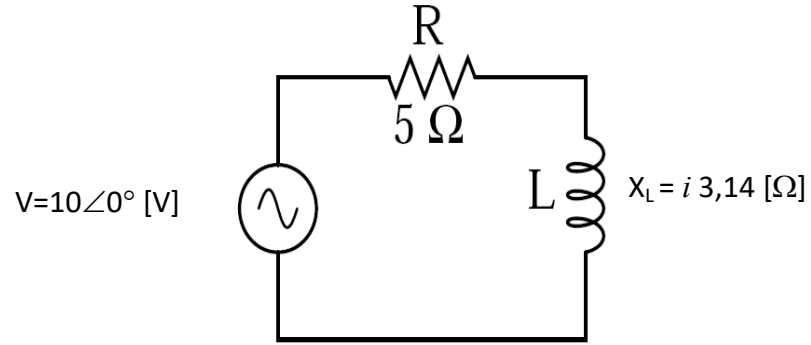


Örnek 1: Sayfa 42'deki örneğin çözümü.



$$P = V \cdot I \cdot \cos \varphi = 10 \cdot 1,69 \cdot \cos(32^\circ)$$

$$P = 14,33 \text{ [W]}$$

$$Q_L = V \cdot I \cdot \sin \varphi = 10 \cdot 1,69 \cdot \sin(32^\circ)$$

$$Q_L = 9,95 \text{ [VAr]}$$

$$Z = 5 + i3,14 \text{ } [\Omega] = 5,9 \angle 32^\circ \text{ } [\Omega]$$

$$I = V / Z = \frac{10 \angle 0^\circ}{5,9 \angle 32^\circ} = 1,69 \angle -32^\circ \text{ [A]}$$

$$S = V \cdot I = 10 \cdot 1,69 = 16,9 \text{ [VA]}$$

Örnek 2.

Örnek 1'deki devre elemanlarının paralel olması durumunda;

$$\frac{1}{Z} = \frac{1}{5} + \frac{1}{i3,14}$$

$$Z = \frac{i15,7}{5+i3,14} = \frac{15,7\angle 90^\circ}{5,9\angle 32^\circ}$$

$$Z = 2,66\angle 58^\circ [\Omega]$$

$$I = V / Z = \frac{10\angle 0^\circ}{2,66\angle 58^\circ} = 3,76\angle -58^\circ [\text{A}]$$

$$P = V * I * \cos\varphi = 10 * 3,76 * \cos(58^\circ)$$

$$P = 19,92 [\text{W}]$$

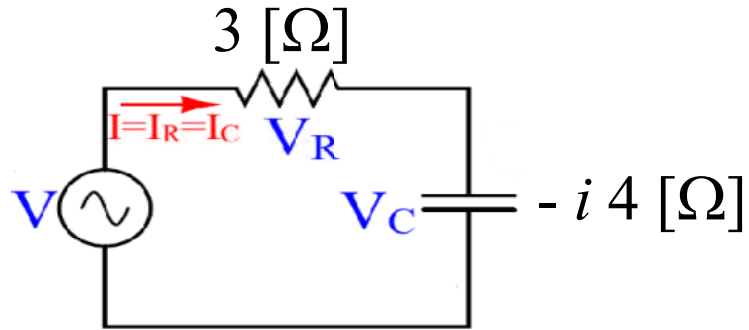
$$Q_L = V * I * \sin\varphi = 10 * 3,76 * \sin(58^\circ)$$

$$Q_L = 31,88 [\text{VAr}]$$

$$S = V * I = 10 * 3,76 = 37,6 [\text{VA}]$$

Örnek 3. Seri bir R-C devresi çözümü;

- $V = 20 \angle 0^\circ$ [V]



$$Z = 3 - i 4 [\Omega] = 5 \angle -53^\circ [\Omega]$$

$$I = V / Z = \frac{20 \angle 0^\circ}{5 \angle -53^\circ} = 4 \angle 53^\circ [\text{A}]$$

$$P = V * I * \cos \varphi = 20 * 4 * \cos(-53^\circ)$$

$$P = 48,15 [\text{W}]$$

$$Q_C = V * I * \sin \varphi = 20 * 4 * \sin(-53^\circ)$$

$$Q_C = -63,89 [\text{VAr}]$$

$$S = V * I = 20 * 4 = 80 [\text{VA}]$$

Örnek 4. Paralel bir R-C devresi çözümü;

$$V = 20 \angle 0^\circ \text{ [V] ;}$$

$$R = 3 \text{ } [\Omega] \text{ ;}$$

$$-i X_C = -i 4 \text{ } [\Omega]$$

$$\frac{1}{Z} = \frac{1}{3} + \frac{1}{-i4}$$

$$Z = \frac{-i12}{3-i4} = \frac{12 \angle -90^\circ}{5 \angle -53^\circ}$$

$$Z = 2,4 \angle -37^\circ \text{ } [\Omega]$$

$$I = V / Z = \frac{20 \angle 0^\circ}{2,4 \angle -37^\circ} = 8,33 \angle 37^\circ \text{ [A]}$$

$$P = V * I * \cos \varphi = 20 * 8,33 * \cos(-37^\circ)$$

$$P = 133,05 \text{ [W]}$$

$$Q_C = V * I * \sin \varphi = 20 * 8,33 * \sin(-37^\circ)$$

$$Q_C = -100,26 \text{ [VAr]}$$

$$S = V * I = 20 * 8,33 = 166,6 \text{ [VA]}$$