# Complex numbers 006

Problem has been graded.

Hint: Solve this symbolically as much as you can and only plug in numbers at the very end.

Find $P$ and $Q$.

Note: We've used bold capital letters to denote complex variables. The * operator stands for complex conjugate. The Re[] and Im[] operators stand for taking the real part and imaginary part respectively.

Solve without a calculator

$$\mathbf{V_0} = ae^{j\frac{\pi}{6}} \qquad \mathbf{Z_1} = 2 + j \qquad \mathbf{Z_2} = bj$$

$$\mathbf{I_1} = \frac{\mathbf{V_0}}{\mathbf{Z_1}} \qquad \mathbf{V_1} = \mathbf{Z_2} \cdot \mathbf{I_1} \qquad \mathbf{S} = \frac{1}{2} \cdot \mathbf{V_1} \cdot \mathbf{I_1^*}$$

$$P = \mathrm{Re}[\mathbf{S}] \qquad Q = \mathrm{Im}[\mathbf{S}]$$

Given Variables:

a : 2 .

b : 1 .

Calculate the following:

P (.) :

0 ✓

Q (.) :

0.4 ✓

Hint: Work this out symbolically first and only plug in numbers later.