Chapter 9, Solution 12.

Let $\mathbf{X} = 4\angle 40°$ and $\mathbf{Y} = 20\angle -30°$. Evaluate the following quantities and express your results in polar form.

(X + Y)/X*
(X - Y)*
(X + Y)/X

$\mathbf{X} = 3.064+j2.571$; $\mathbf{Y} = 17.321-j10$

(a) $\mathbf{(X + Y)X^*} = (20.38 - j7.429)(4\angle -40°)$
$= (21.69\angle -20.03°)(4\angle -40°) = 86.76\angle -60.03°$
$= \mathbf{86.76\angle -60.03}°$

(b) $\mathbf{(X - Y)^*} = (-14.257+j12.571)^* = \mathbf{19.41\angle -139.63}°$

(c) $\mathbf{(X + Y)/X} = (21.69\angle -20.03°)/(4\angle 40°) = \mathbf{5.422\angle -60.03}°$