CONCEPTUAL __TOOLS__

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COMPLEX ANALYSIS
RECTANGULAR/ POLAR FORMS
Example 1

EX:　　Find the rectangular and polar forms of $\dfrac{6-j2}{4+j5}$.

ANS:　　$\dfrac{14}{41} - j\dfrac{38}{41}$ and $0.987e^{-j69.78°}$

SOL'N:　　$\dfrac{6-j2}{4+j5} = \dfrac{6-j2}{4+j5}\dfrac{(4+j5)^*}{(4+j5)^*} = \dfrac{6-j2}{4+j5}\dfrac{(4-j5)}{(4-j5)}$

$$= \dfrac{24-10-j(30+8)}{16+25} = \dfrac{14}{41} - j\dfrac{38}{41}$$

$$A = \sqrt{\left(\dfrac{14}{41}\right)^2 + \left(\dfrac{38}{41}\right)^2} = 0.987$$

$$\phi = \tan^{-1}\left(\dfrac{-38}{41}\right) = -69.78°$$