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EX: Find the rectangular form of $6e^{-j47°}$

ANS: $4.09 - j4.39$

SOL'N: We must express $6e^{-j47°}$ in rectangular form $a + jb$.

We use Euler's formula for the complex exponential:

$$6e^{-j47°} = 6\cos(-47°) + j6\sin(-47°)$$

Applying identities, $\cos(-A) = \cos(A)$ and $\sin(-A) = -\sin(A)$, we have

$$= 6\cos(47°) - j6\sin(47°)$$

$$6e^{-j47°} = 4.09 - 4.39$$