

Problem 1.23 If $z = 3 - j4$, find the value of e^z .

Solution:

$$e^z = e^{3-j4} = e^3 \cdot e^{-j4} = e^3 (\cos 4 - j \sin 4),$$
$$e^3 = 20.09, \quad \text{and} \quad 4 \text{ rad} = \frac{4}{\pi} \times 180^\circ = 229.18^\circ.$$

Hence, $e^z = 20.08(\cos 229.18^\circ - j \sin 229.18^\circ) = -13.13 + j15.20$.
