

1.23 If $z = 3e^{j\pi/6}$, find the value of e^z .

Solution:

$$\begin{aligned} z &= 3e^{j\pi/6} = 3\cos\pi/6 + j3\sin\pi/6 \\ &= 2.6 + j1.5 \end{aligned}$$

$$\begin{aligned} e^z &= e^{2.6+j1.5} = e^{2.6} \times e^{j1.5} \\ &= e^{2.6}(\cos 1.5 + j\sin 1.5) \\ &= 13.46(0.07 + j0.98) \\ &= 0.95 + j13.43. \end{aligned}$$
