# COMPLEX NUMBERS AND QUADRATIC EQUATIONS

## ARGAND PLANE AND POLAR REPRESENTATION

### EXERCISE             (For competitive exam)

**Q.1**     Represent the complex number $z = -1 + \sqrt{2}\,i$ in polar form.

**Q.2**     Determine the principal argument and modulus |z| for the complex number

$$z = \frac{-i\,(9+i)}{2-i}$$

**Q.3**     Determine the modulus |z| and principal argument of the complex number

$$z = 6(\cos 310^\circ - i \sin 310^\circ)$$

### ANSWER KEY

**1.**     $z = \sqrt{3}\,(\cos\theta + i\sin\theta)$ where $\theta = \pi - \tan^{-1}\sqrt{2}$

**2.**     principal argument $= -\tan^{-1}\dfrac{17}{11}$ , $|z| = \dfrac{\sqrt{410}}{5}$

**3.**     $|z| = 6$, principal argument $= 50^\circ$