



Complex Numbers Ex 13.3 Q1(iv)

$$\text{let } z = -8 - 6i$$

$$\begin{aligned}\text{then } |z| &= \sqrt{(-8)^2 + (-6)^2} \\ &= \sqrt{64 + 36} \\ &= \sqrt{100} \\ &= 10\end{aligned}$$

$$\begin{aligned}\therefore \sqrt{-8 - 6i} &= \pm \left\{ \sqrt{\frac{10-8}{2}} - i \sqrt{\frac{10+8}{2}} \right\} \quad (\because y < 0) \\ &= \pm \left\{ \sqrt{\frac{2}{2}} - i \sqrt{\frac{18}{2}} \right\} \\ &= \pm \{ \sqrt{1} - i \sqrt{9} \} \\ &= \pm \{ 1 - 3i \}\end{aligned}$$

Complex Numbers Ex 13.3 Q1(v)

$$\text{let } z = 8 - 15i$$

$$\begin{aligned}\text{then } |z| &= \sqrt{(8)^2 + (-15)^2} \\ &= \sqrt{64 + 225} \\ &= \sqrt{289} \\ &= 17\end{aligned}$$

$$\begin{aligned}\therefore \sqrt{8 - 15i} &= \pm \left\{ \sqrt{\frac{17+8}{2}} - i \sqrt{\frac{17-8}{2}} \right\} \quad (\because y < 0) \\ &= \pm \left\{ \sqrt{\frac{25}{2}} - i \sqrt{\frac{9}{2}} \right\} \\ &= \pm \left\{ \frac{5}{\sqrt{2}} - i \frac{3}{\sqrt{2}} \right\} \\ &= \pm \frac{1}{\sqrt{2}} \{ 5 - 3i \}\end{aligned}$$

Complex Numbers Ex 13.3 Q1(vi)

$$\text{Let } z = -11 - 60\sqrt{-1}$$

$$\Rightarrow z = -11 - 60i \quad (\because \sqrt{-1} = i)$$

$$\text{Then } |z| = \sqrt{(-11)^2 + (-60)^2}$$

$$= \sqrt{121 + 3600}$$

$$= \sqrt{3721}$$

$$= 61$$

$$\therefore \sqrt{-11 - 60i} = \pm \left\{ \sqrt{\frac{61-11}{2}} - i\sqrt{\frac{61+11}{2}} \right\} \quad (\because y < 0)$$

$$= \pm \left\{ \sqrt{\frac{50}{2}} - i\sqrt{\frac{72}{2}} \right\}$$

$$= \pm \{ \sqrt{25} - i\sqrt{36} \}$$

$$= \pm \{ 5 - 6i \}$$

***** END *****