.

Quadratic Equations Ex 14.1 Q1

$$x^2+1=0$$

$$\Rightarrow \quad x^2+i^2=0 \qquad \left[\because i^2=-1\right]$$

$$\Rightarrow \quad (x+i)(x-i)=0 \qquad \left[a^2-b^2=(a+b)(a-b)\right]$$

$$\Rightarrow \quad x=i,-i$$

Quadratic Equations Ex 14.1 Q2

$$9x^2+4=0$$

$$\Rightarrow \quad (3x)^2-(2i)^2=0 \qquad \left[\because i^2=-1\right]$$

$$\Rightarrow \quad (3x+2i)(3x-2i)=0$$

$$\Rightarrow \quad 3x+2i=0 \quad \text{or} \quad 3x-2i=0$$

$$\Rightarrow \quad x=\frac{-2}{3}i \quad \text{or} \quad x=\frac{2}{3}i$$

$$\therefore \quad x=\frac{-2}{3}i,\frac{2}{3}i$$

Quadratic Equations Ex 14.1 Q3

$$x^2+2x+5=0$$

Now, completing the squares, we get

$$(x+1)^2+4=0$$

$$\Rightarrow \quad (x+1)^2-2i^2=0$$

$$\Rightarrow \quad (x+1+2i)(x+1-2i)=0$$

$$\Rightarrow \quad (x+1+2i)=0 \quad or \quad (x+1-2i)=0$$

$$\therefore \quad x=-1-2i, \quad -1+2i$$

Quadratic Equations Ex 14.1 Q4

$$4x^2 - 12x + 25 = 0$$

Now, completing the squares, we get

$$(2x - 3)^2 + 16 = 0$$

$$\Rightarrow \quad (2x - 3)^2 - 4i^2 = 0$$

$$\Rightarrow \quad (2x - 3 + 4i)(2x - 3 - 4i) = 0$$

$$\Rightarrow \quad (2x - 3 + 4i) = 0 \qquad or \qquad (2x - 3 - 4i) = 0$$

$$\therefore \quad x = \frac{3}{2} + 2i, \quad \frac{3}{2} - 2i$$

********** END **********