

General Solution of Some Particular Equations.

$$(1) \quad \sin \theta = 0 \Rightarrow \theta = n\pi, \quad \cos \theta = 0 \Rightarrow \theta = (2n+1)\frac{\pi}{2} \text{ or } n\pi + \frac{\pi}{2}, \quad \tan \theta = 0 \Rightarrow \theta = n\pi$$

$$(2) \quad \sin \theta = 1 \Rightarrow \theta = (4n+1)\frac{\pi}{2} \text{ or } 2n\pi + \frac{\pi}{2}, \quad \cos \theta = 1 \Rightarrow \theta = 2n\pi, \quad \tan \theta = 1 \Rightarrow \theta = (4n+1)\frac{\pi}{4} \text{ or } n\pi + \frac{\pi}{4}$$

$$(3) \quad \sin \theta = -1 \Rightarrow \theta = (4n+3)\frac{\pi}{2} \text{ or } 2n\pi + \frac{3\pi}{2}, \quad \cos \theta = -1 \Rightarrow \theta = (2n+1)\pi, \quad \tan \theta = -1 \Rightarrow \theta = (4n-1)\frac{\pi}{4} \text{ or } n\pi - \frac{\pi}{4}$$

$$(4) \quad \tan \theta = \text{not defined} \Rightarrow \theta = (2n+1)\frac{\pi}{2}, \quad \cot \theta = \text{not defined} \Rightarrow \theta = n\pi$$

$$\operatorname{cosec} \theta = \text{not defined} \Rightarrow \theta = n\pi, \quad \sec \theta = \text{not defined} \Rightarrow \theta = (2n+1)\frac{\pi}{2}.$$

Important Tips

☞ For equations involving two multiple angles, use multiple and sub-multiple angle formulas, if necessary.

☞ For equations involving more than two multiple angles (i) Apply $C \pm D$ formula to combine the two. (ii) Choose such pairs of multiple angle so that after applying the above formulae we get a common factor in the equation.