

$$1) \sin x = \frac{\sqrt{3}}{2}$$

$$x = 60, 120$$

$$2) \tan x = 1$$

$$x = 45, 225$$

$$3) \tan x = \sqrt{3}$$

$$x = 60, 240$$

$$4) \sin x = 0$$

$$x = 0, 180, 360$$

$$5) \cos x = \frac{\sqrt{3}}{2}$$

$$x = 30, 330$$

$$6) \tan x = -\frac{\sqrt{3}}{3}$$

$$x = 150, 330$$

$$7) 2 \cos x + \sqrt{3} = 0$$

$$2 \cos x = -\sqrt{3}$$

$$\cos x = \frac{-\sqrt{3}}{2}$$

$$150, 210$$

$$8) 4 \sin x - 1 = 2 \sin x$$

$$\frac{2 \sin x - 1}{2 \sin x - 1} = 0$$

$$\sin x = \frac{1}{2}$$

$$30, 150$$

$$9) 3 \sin x + 5 = -2 \sin x$$

$$5 \sin x + 5 = 0$$

$$5 \sin x = -5$$

$$\sin x = -1$$

$$x = 270$$

$$10) 7 \cos x + 9 = -2 \cos x$$

$$9 \cos x + 9 = 0$$

$$\cos x = -1$$

$$x = 180$$

$$11) 2 \sin^2 x - \sin x - 1 = 0$$

$$\frac{(\sin x + 1)(\sin x - 2)}{2} = 0$$

$$\sin x = -\frac{1}{2} \quad \sin x = 1$$

$$210, 330 \quad 90,$$

$$12) \cos^2 x + 2 \cos x - 3 = 0$$

$$\frac{(\cos x - 1)(\cos x + 3)}{2} = 0$$

$$\cos x = 1 \quad \cos x = -3$$

$$0, 360 \quad \text{NS}$$

$$13) 2 \cos^2 x + 3 \cos x + 1 = 0$$

$$\frac{(\cos x + 1)(\cos x + 2)}{2} = 0$$

$$\cos x = -\frac{1}{2}$$

120, 240

$$\cos x = -1$$

180

14)  $2 \sin^2 x - 4 \sin x - 6 = 0$  6, 2  
 $(\sin x - \frac{6}{2})(\sin x + \frac{2}{2}) = 0$

$(\sin x - 3)(\sin x + 1) = 0$   
 $\sin x = 3$   $\sin x = -1$   
NS  $270^\circ$

15)  $9 \tan^2 x - 3 = 0$

$$9 \tan^2 x = 3$$
$$\sqrt{\tan^2 x} = \frac{\sqrt{3}}{\sqrt{9}}$$

$$\tan x = \pm \frac{\sqrt{3}}{3}$$

30, 150, 210, 330

16)  $4 \sin^2 x - 3 = 0$

$$\frac{4 \sin^2 x}{4} = \frac{3}{4}$$

$$\sqrt{\sin^2 x} = \sqrt{\frac{3}{4}}$$

$$\sin^2 x = \pm \frac{\sqrt{3}}{2}$$

$x = 60, 120, 240, 300$

17)  $4 \cos^2 x - 1 = 0$

$$\frac{4 \cos^2 x}{4} = \frac{1}{4}$$

$$\sqrt{\cos^2 x} = \sqrt{\frac{1}{4}}$$

$$\cos x = \pm \frac{1}{2}$$

60, 120, 240, 300

$$18) \sec^2 x - 2 = 0$$

$$\sqrt{\sec^2 x} = \sqrt{2}$$

$$\sec x = \pm \sqrt{2}$$

$$45, 135, 225, 315$$

$$19) 2 \tan^2 x + 5 \tan x + 3 = 0$$

$$\left(\tan x + \frac{2}{2}\right) \left(\tan x + \frac{3}{2}\right) = 0$$

$$(\tan x + 1) (\tan x + 3/2) = 0$$

$$\tan x = -1 \quad \tan x = -3/2$$

$$135$$

NS

$$20) \tan^2 x \cos^2 x - \tan^2 x = 0$$

$$\tan^2 x (\cos^2 x - 1) = 0$$

$$\tan^2 x = 0$$

$$\cos x = 1$$

$$x = 0, 180, 360$$

$$x = 0, 360$$

$$21) 5 \cot^2 x - 15 = 0$$

$$5 \cot^2 x = 15$$

$$\sqrt{\cot^2 x} = \sqrt{3}$$

$$\cot x = \pm \sqrt{3}$$

$$30, 150, 210, 330$$

$$22) \cot^2 x \sin x - \cot^2 x = 0$$

$$\cot^2 x (\sin x - 1) = 0$$

$$\cot^2 x = 0$$

$$\sin x = 1$$

$$270,$$

$$90$$

$$23) \sec^2 \theta + 2 \sec \theta = 0$$

$$\sec \theta (\sec \theta + 2) = 0$$

$$\sec \theta = 0$$

$$\sec \theta = -2$$

NS

$$135, 225$$

$$120, 240$$

$$24) \tan^2 \theta + 2 \tan \theta + 1 = 0$$

$$(\tan \theta + 1)(\tan \theta + 1) = 0$$

$$\tan \theta = -1 \quad \tan \theta = -1$$

$$\theta = 135 \quad \theta = 135$$

$$25) 2 \sin^2 \theta - 5 \sin \theta + 2 = 0$$

$$\left( \sin \theta - \frac{1}{2} \right) \left( \sin \theta - 4 \right) = 0$$

$$\sin \theta = \frac{1}{2} \quad \sin \theta = 2$$

NS

$$30, 150$$

$$26) \sqrt{3} \tan^2 x - \tan x = 0$$

$$\sqrt{3} \tan x (\sqrt{3} \tan x - 1) = 0$$

$$\tan x = 0 \quad \tan x = \frac{1}{\sqrt{3}}$$

$$0, 180, 360 \quad \tan x = \frac{\sqrt{3}}{3}$$

$$30, 210$$

$$27) 2 \cos^2 x - 1 = 0$$

$$\frac{2 \cos^2 x}{2} = \frac{1}{2}$$

$$\sqrt{\cos^2 x} = \frac{1}{\sqrt{2}}$$

$$\cos x = \pm \frac{1}{\sqrt{2}}$$

$$\cos x = \pm \frac{\sqrt{2}}{2}$$

$$45, 315, 225, 135$$

$$25) \quad 2 \sin^2 x + \sin x - 3 = 0$$

$$\left( \sin x - \frac{2}{2} \right) \left( \sin x + \frac{3}{2} \right) = 0$$

6  
1, 6  
2, 3

$$\left( \sin x - 1 \right) \left( \sin x + \frac{3}{2} \right) = 0$$

$$\sin x = 1 \quad \sin x = -\frac{3}{2}$$

90

NS

$$29) \quad \cot x (\tan x - 1)$$

$$1 - \cot x = 0$$

$$-\cot x = -1$$

$$\cot x = 1$$

45, 225

$$30) \quad \sin x + 2 \sin x \cos x = 0$$

$$\sin x (1 + 2 \cos x) = 0$$

$$\sin x = 0$$

$$2 \cos x = -1$$

0, 180, 360

$$\cos x = -\frac{1}{2}$$

120, 240

$$31) \quad 2 \cos^2 \theta + 3 \sin \theta = 0$$

$$2(1 - \sin^2 \theta) + 3 \sin \theta = 0$$

$$2 - 2 \sin^2 \theta + 3 \sin \theta = 0$$

$$-2 \sin^2 \theta + 3 \sin \theta + 2 = 0$$

$$-1(2 \sin^2 \theta - 3 \sin \theta - 2) = 0$$

$$\left( \sin x - \frac{4}{2} \right) \left( \sin x + 1 \right) = 0$$

4,  
1, 4

$$\sin x = 2$$

NS

$$\sin x = -\frac{1}{2}$$

x = 210, 330

$$32. \sin^2 \theta - \sin \theta + 1 = \cos^2 \theta$$

$$\sin^2 \theta - \sin \theta + 1 = 1 - \sin^2 \theta$$


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$$+ \sin^2 \theta \quad -1 \quad -1 \quad + \sin^2 \theta$$

$$2\sin^2 \theta - \sin \theta = 0$$

$$\sin \theta (2\sin \theta - 1) = 0$$

$$\sin \theta = 0 \quad \sin \theta = 1/2$$

$$0, 180, 360 \quad 30, 150$$

33)

$$2 + \tan^2 x - 3 \sec x = 0$$

$$2(\sec^2 x - 1) - 3 \sec x = 0$$

$$2 \sec^2 x - 2 - 3 \sec x = 0$$

$$2 \sec^2 x - 3 \sec x - 2 = 0$$

$$\left(\sec x - \frac{4}{2}\right)\left(\sec x + \frac{1}{2}\right) = 0$$

$$\sec x = 2 \quad \sec x = -1/2$$

$$60, 300 \quad \text{NS.}$$

34)  $\sin^2 \theta + 2 \cos \theta = -2$

$$1 - \cos^2 \theta + 2 \cos \theta + 2 = 0$$

$$-\cos^2 \theta + 2 \cos \theta + 3 = 0$$

$$\cos^2 \theta - 2 \cos \theta - 3 = 0$$

$$(\cos \theta - 3)(\cos \theta + 1) = 0$$

$$\cos \theta = 3 \quad \cos \theta = -1$$

$$\text{NS} \quad \text{180}$$