

## Section 6.5

### I) Find the exact value of the following

- 1)  $\sin^{-1} \frac{1}{\sqrt{2}}$  2)  $\cos^{-1}(-\frac{\sqrt{3}}{2})$  3)  $\tan^{-1} \sqrt{3}$  4)  $\tan^{-1}(-\frac{1}{\sqrt{3}})$  5)  $\cos^{-1}(-1)$  6)  $\cos^{-1}(-\frac{1}{2})$  7)  $\tan^{-1} 0$  8)  $\sin^{-1}(-1)$   
9)  $\cos^{-1} 1$  10)  $\cos^{-1} 0$  11)  $\sin^{-1}(-\frac{1}{2})$  12)  $\tan^{-1}(-1)$

### II) Find the exact value of each expression

- 1)  $\sin[\cos^{-1}(-\frac{1}{\sqrt{2}})]$  2)  $\cos[\sin^{-1}(-\frac{\sqrt{3}}{2})]$  3)  $\sin^{-1}(\sin \frac{7\pi}{6})$  4)  $\cos^{-1}(\cos \frac{6\pi}{5})$  5)  $\tan^{-1}(\tan \frac{7\pi}{4})$  6)  $\sin^{-1}(\sin \frac{7\pi}{8})$   
7)  $\cos^{-1}(\cos \frac{9\pi}{5})$  8)  $\tan^{-1}(\tan \frac{8\pi}{7})$  9)  $\sin^{-1}(\sin \frac{13\pi}{7})$  10)  $\cos^{-1}[\cos(-\frac{\pi}{5})]$  11)  $\sin^{-1}(\sin \frac{9\pi}{10})$  12)  $\tan^{-1}[\tan(-\frac{\pi}{20})]$   
13)  $\sin[\sin^{-1}(-b)]$ ,  $-1 < b < 0$  14)  $\cos[\cos^{-1}(-\frac{b}{a})]$ ,  $a < b$  15)  $\tan[\tan^{-1}(-\frac{2}{\sqrt{3}})]$  16)  $\cos(\cos^{-1} \frac{2}{3})$   
17)  $\cos[\cos^{-1}(-\frac{1}{10})]$  18)  $\sin[\sin^{-1}(-\frac{2}{\sqrt{3}})]$  19)  $\sin(\sin^{-1} \frac{\sqrt{2}}{2})$  20)  $\tan[\tan^{-1}(-\frac{\sqrt{2}}{2})]$  21)  $\tan(\tan^{-1} \frac{23\pi}{15})$   
22)  $\sec[\sin^{-1}(-\frac{b}{a})]$ ,  $a > b$  23)  $\csc[\cos^{-1}(-\frac{2}{5})]$  24)  $\sin[\tan^{-1}(-\frac{1}{a})]$ ,  $a > 0$  25)  $\cot[\sin(-\frac{3}{5})]$  26)  $\cos(\tan^{-1} \frac{\sqrt{2}}{2})$   
27)  $\sin(\cos^{-1} \frac{1}{\sqrt{3}})$  28)  $\cos(\sin^{-1} \sqrt{3})$  29)  $\sin^{-1}(-\frac{1}{2}) + 2\cos^{-1}(-\frac{\sqrt{3}}{2})$  30)  $\cot[\sin^{-1}(-\frac{\sqrt{2}}{2}) - \cos^{-1}(0)]$   
31)  $\sec[2\tan^{-1}(-1) - \cos^{-1}(-\frac{1}{2})]$

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## Section 6.6: Solve over $[-\pi, \frac{3\pi}{2}]$

- 1)  $\sin \theta = -\frac{\sqrt{3}}{2}$  2)  $\tan \theta = -1$  3)  $\cos \theta = \frac{\sqrt{3}}{2}$  4)  $\csc \theta = 2$  5)  $\cot \theta = \frac{1}{\sqrt{3}}$  6)  $\tan 2\theta = 0$  7)  $\sin 3\theta = 1$   
8)  $\cos 2\theta = -\frac{1}{2}$  9)  $\sin \frac{\theta}{2} = \frac{1}{2}$  10)  $\tan \frac{\theta}{2} = -\sqrt{3}$  11)  $\cos(2\theta - \frac{\pi}{2}) = -1$  12)  $\sin(\theta - \pi) = -\frac{1}{2}$   
13)  $\tan(2\theta - \frac{\pi}{4}) = 1$  14)  $\sin(2\theta + \frac{\pi}{3}) = -\frac{\sqrt{3}}{2}$  15)  $\cos(2\theta - \frac{\pi}{4}) = -\frac{\sqrt{2}}{2}$  16)  $\tan \frac{3\theta}{2} = 1$

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## Section 6.7: Solve over $[-\pi, \pi)$ [ find the number of solution over the given interval]

- 1)  $2\cos^2 \theta = \sqrt{3} \cos \theta$  2)  $\sin \theta + \sin 2\theta = 0$  3)  $2\cos^2 \theta + \sin \theta = 2$  4)  $\sin^2 \theta - 2\sin \theta = 3$  5)  $\sqrt{3} \sin 2\theta + \cos 2\theta = 0$   
6)  $2\sin \theta + \csc \theta - 3 = 0$  7)  $\sec^2 \theta = 1 + \sqrt{3} \tan \theta$  8)  $2\cos^2 \theta + 3\cos \theta - 2 = 0$  9)  $\sec^2 \theta - 4 = 0$  10)  $\sin \theta = \tan \theta$   
11)  $2\sin^2 \theta + \sin \theta - 6 = 0$  12)  $2\cos^3 \theta - \cos \theta = 0$  13)  $\sin^2 2\theta = \sin 2\theta$  14)  $\cos 2\theta + \cos \theta - 2 = 0$   
15)  $\tan \theta + \cot \theta + 2 = 0$  16)  $3\cot^2 \theta + 1 = 0$  17)  $\cos^2 \frac{\theta}{2} = \frac{1}{4}$  18)  $\sin^2 \theta - \cos^2 \theta = 1$  19)  $\sin^2 \theta - \cos^2 \theta = 0$   
20)  $\csc^2 \theta = 2 \cot \theta$  21)  $2\tan \theta \cos^2 \theta = 1$  22)  $2\csc^2 \theta - 1 = 0$  23)  $2(\cos^2 \theta - \sin^2 \theta) = \sqrt{2}$   
24)  $3\sec^2 \theta - 2\sec \theta - 1 = 0$  25)  $\tan \theta \cos \theta + \tan \theta = 0$  26)  $3\sin \theta - 2 - \csc \theta = 0$