

Mth 113 Friday 2-22-13 Class Notes

Pg 202
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$$\sin^2 x - \cos^2 x = 0$$

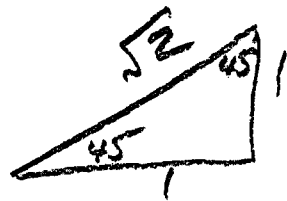
$$\sin^2 x - (1 - \sin^2 x) = 0$$

$$\sin^2 x - 1 + \sin^2 x = 0$$

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

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

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



ALL 4 quadrants

$$\therefore x = 45^\circ, 135^\circ, 225^\circ, 315^\circ$$

(EX)

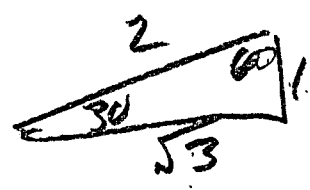
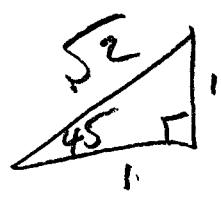
$$\tan \frac{7\pi}{12}$$

$$\frac{7\pi}{12} \cdot \frac{180 \text{ deg}}{\pi \text{ rad}} = 105^\circ$$

NOTE: $105^\circ = 60^\circ + 45^\circ$

$$\tan(\alpha + \beta) = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$$

$$\tan(60 + 45) = \frac{\tan 60 + \tan 45}{1 - \tan 60 \tan 45}$$



$$= \frac{\sqrt{3} + 1}{1 - (\sqrt{3})(1)} = \frac{\sqrt{3} + 1}{1 - \sqrt{3}}$$

$$\frac{\sqrt{3} + 1}{1 - \sqrt{3}} \cdot \frac{1 + \sqrt{3}}{1 + \sqrt{3}}$$

$$= \frac{\sqrt{3} + 3 + 1 + \sqrt{3}}{1^2 - 3}$$

$$= \frac{4 + 2\sqrt{3}}{-2}$$

$$= \boxed{-2 - \sqrt{3}}$$