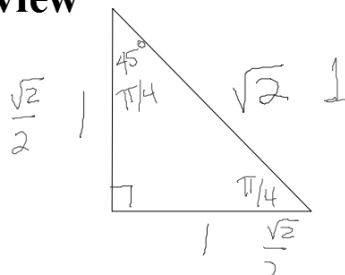
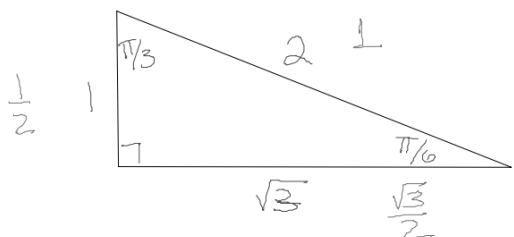


Trigonometry Review



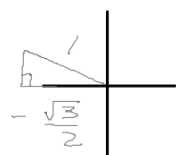
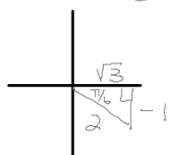
Evaluate:

$$\sin \frac{11\pi}{6} = -\frac{1}{2}$$

$$\cos \frac{5\pi}{6} = -\frac{\sqrt{3}}{2}$$

$$\tan \frac{5\pi}{4} = \frac{-1}{-1} = 1$$

$$\sin(3\pi) = 0 \quad \sec\left(\frac{\pi}{2}\right) = \frac{1}{0} = \text{undef.}$$



Solving Trig Equations: $[0, 2\pi)$

1. $2 \cos x = -1$

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

$$x = \frac{2\pi}{3}, \frac{4\pi}{3}$$



2. $\sqrt{2} \sec x = 1$

$$\sec x = \frac{1}{\sqrt{2}}$$

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

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

no solution

3. $\cot x = 0$

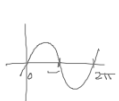
$$x = \frac{\pi}{2}, \frac{3\pi}{2}$$



$$4. \sin x \cdot \tan^2 x - \sin x = 0$$

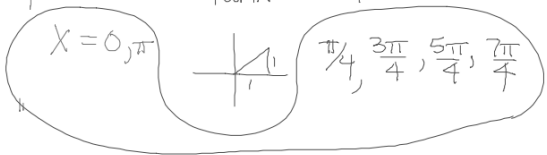
$$\sin x (\tan^2 x - 1) = 0$$

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



$$\sqrt{\tan^2 x} = \sqrt{1}$$

$$\tan x = \pm 1$$



$$5. 2\sin^2 x + 3\sin x = 2$$

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

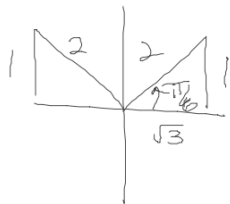
$$(2\sin x - 1)(\sin x + 2) = 0$$

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

$$\sin x + 2 = 0$$

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

~~$$\sin x = -2$$~~



$$x = \frac{\pi}{6}, \frac{5\pi}{6}$$

$$6. 2\sin^2 x = 1 - \cos x$$

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

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

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

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

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

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

$$2\cos x + 1 = 0 \quad \cos x - 1 = 0$$

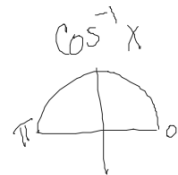
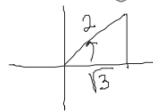
$$\cos x = -\frac{1}{2}$$

$$\cos x = 1$$

$$x = 0$$

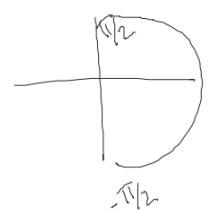
$$x = \frac{2\pi}{3}, \frac{4\pi}{3}, 0$$

$$7. \cos^{-1}\left(\frac{\sqrt{3}}{2}\right) = \pi/6$$



$$8. \sin^{-1}\left(-\frac{\sqrt{2}}{2}\right) = -\pi/4$$

$\sin^{-1} x$ and $\tan^{-1} x$



$$9. \cos\left[\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)\right]$$

$$\cos\left[-\pi/4\right] = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$



10. Simplify

$$\tan x \cdot \cos x$$

$$= \frac{\sin x}{\cos x} \cdot \frac{\cos x}{1}$$

$$= \boxed{\sin x}$$

Trig Identities:

$$\sin^2 x + \cos^2 x = 1$$

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

$$\tan^2 x + 1 = \sec^2 x$$

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

$$\sec x = \frac{1}{\cos x}$$

Trig. Identities can
be found on page 572
of your book