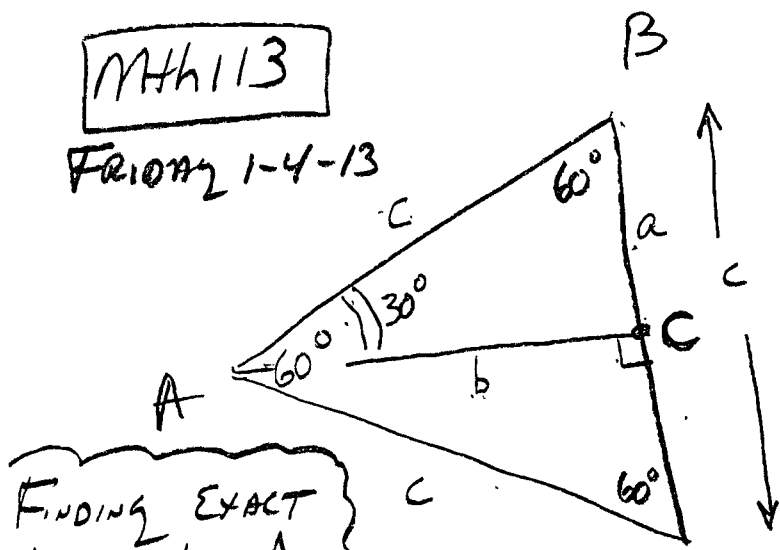


MTH113

FRIDAY 1-4-13

CLASS NOTES



FINDING EXACT trig ratios for 30°, 60°...

$$\sin 30^\circ = \frac{a}{c} = \frac{\frac{c}{2}}{c} = \frac{1}{2}$$

$$\sin 30^\circ = \frac{1}{2}$$

$$\cos 30^\circ = \frac{b}{c} = \frac{\frac{\sqrt{3}c}{2}}{c} = \frac{\sqrt{3}}{2}$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\tan 30^\circ = \frac{a}{b} = \frac{\frac{c}{2}}{\frac{\sqrt{3}c}{2}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} = \tan 30^\circ$$

$$2a = c$$

$$a = \frac{c}{2}$$

$$c^2 = a^2 + b^2$$

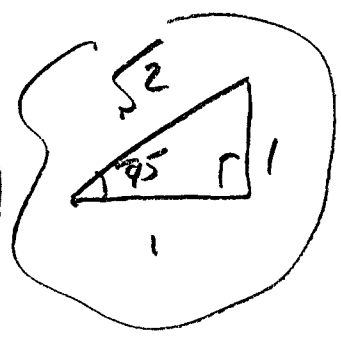
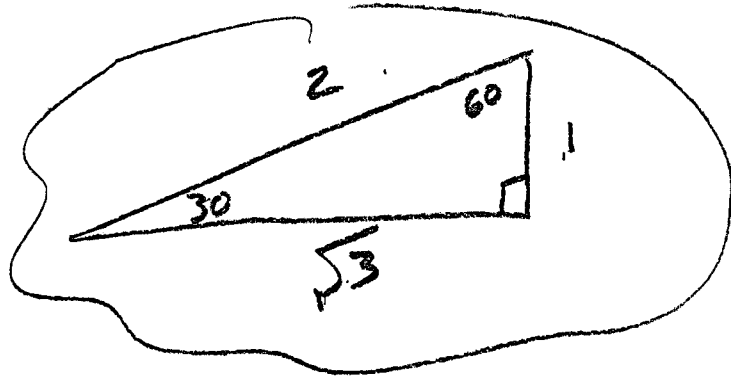
$$b^2 = c^2 - a^2$$

$$b^2 = c^2 - \frac{c^2}{4}$$

$$b^2 = \frac{4c^2}{4} - \frac{c^2}{4}$$

$$b^2 = \frac{3c^2}{4}$$

$$b = \sqrt{\frac{3c^2}{4}} = \frac{\sqrt{3}c}{2}$$



For  $30^\circ$   $\sin 30^\circ = \frac{1}{2}$

$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\sin^2 \theta + \cos^2 \theta \stackrel{?}{=} 1$$

$$\sin^2(30^\circ) + \cos^2(30^\circ) = 1$$

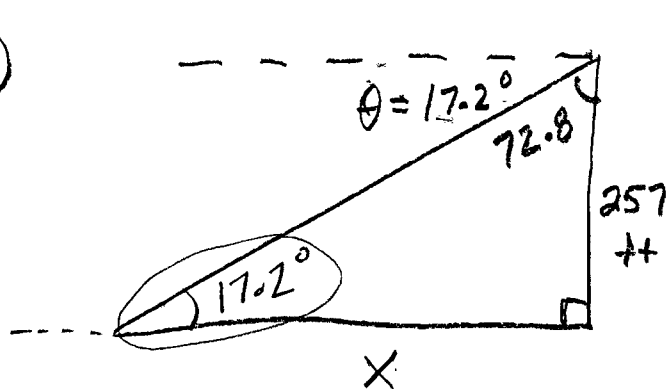
$$\frac{1}{4} + \frac{3}{4} \stackrel{?}{=} 1 \quad \checkmark$$

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$$\text{FTI} \Rightarrow \sin^2 \theta + \cos^2 \theta = 1$$

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#82  
Pg 27



$$\begin{array}{r} 96.0 \\ -17.2 \\ \hline 72.8 \end{array}$$

$$\tan 17.2^\circ = \frac{257}{X}$$

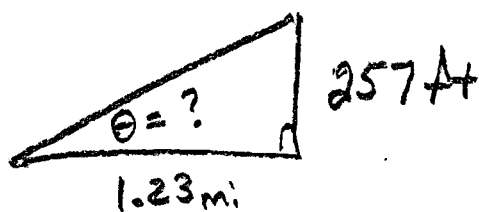
$$X \tan 17.2^\circ = 257$$

$$X = \frac{257}{\tan 17.2^\circ} = \frac{257}{.3096}$$

$$X = 830.23$$

$$X = 830 \text{ ft}$$

#83



$$1 \text{ mi} = 5280 \text{ ft}$$

$$\tan \theta = \frac{257 \text{ ft}}{1.23 \text{ mi} \cdot \frac{5280 \text{ ft}}{\text{mi}}} = \frac{257}{6494.4}$$

$$\tan \theta = .03957$$

$$\tan^{-1}(.03957) = \theta = 2.266$$

$$\theta = 2.3^\circ$$

①  
Pg 31

$$2 \sin X = 1$$

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

$$X = 30^\circ$$

②  
Pg 31

$$5 \sin X = 3$$

$$\sin X = \frac{3}{5}$$

$$\sin^{-1}(.6000) = X = 36.8699^\circ$$

$$X = 36.9^\circ$$

# Trig. Equations - Simple