

BE-Geometry || MONDAY 11-21-11

① Using the properties of a
45-45-90 and 30-60-90 Δ ,

Find the exact values of

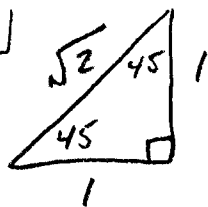
the $\sin 45^\circ$, $\cos 45^\circ$, $\tan 45^\circ$

$\sin 30^\circ$, $\cos 30^\circ$, $\tan 30^\circ$

$\sin 60^\circ$, $\cos 60^\circ$, $\tan 60^\circ$

Hint: 45-45-90 30-60-90
 $1:1:\sqrt{2}$ $1:\sqrt{3}:2$

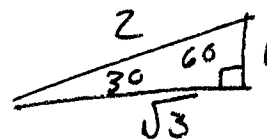
ANS



$$\sin 45^\circ = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\cos 45^\circ = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\tan 45^\circ = \frac{1}{1} = 1$$



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

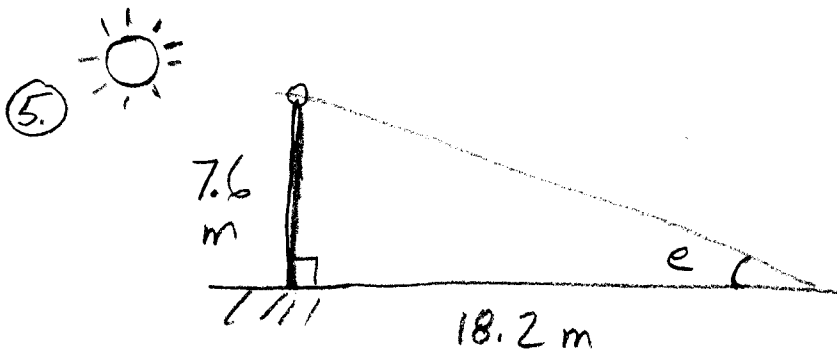
$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$\cos 60^\circ = \frac{1}{2}$$

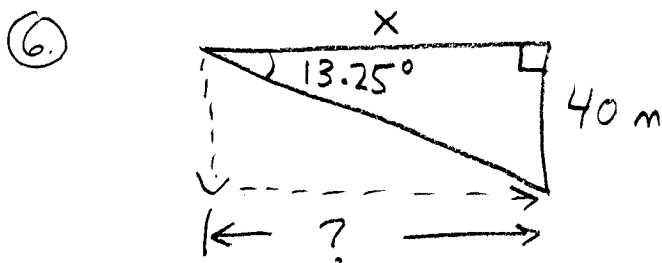
$$\tan 60^\circ = \frac{\sqrt{3}}{1}$$



$$\tan e = \frac{7.6}{18.2} = \frac{76}{182} = \frac{38}{91} \approx 0.4176$$

$$\tan^{-1}(0.4176) \approx 23^\circ \text{ (table)}$$

$$\approx 22.66^\circ \approx 22.7^\circ$$



$$\tan 13.25^\circ = \frac{40}{x}$$

$$x = \frac{40}{.2355}$$

$$x = 169.85 \text{ m}$$

$$\tan 13^\circ = .2309$$

$$\tan 14^\circ = .2493$$

$$\text{diff} = .2493 - .2309 = .0184$$

$$\begin{array}{r} .0184 \\ \times .25 \\ \hline .0046 \end{array}$$

$$\begin{array}{r} .2309 \\ + .0046 \\ \hline .2355 \end{array}$$

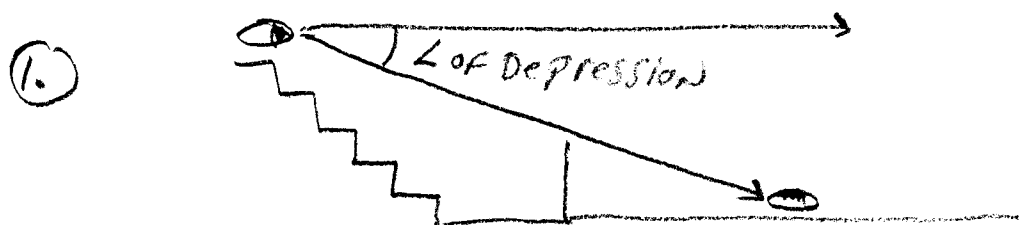
$$\begin{array}{r} .2309 \\ + .0046 \\ \hline .2355 \end{array}$$

6 places

$$.23546 \checkmark$$

LINEAR INTERPOLATION

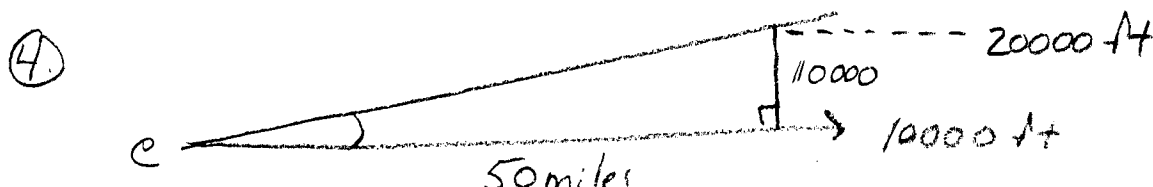
Homework Review: Pg. 373 # 1-7



FOOTBALL STANDS TO FIELD.

② Because the line of sight is elevated (above) the horizontal line.

③ $\angle FPB \Rightarrow \angle \text{of depression}$
 $\angle TBP \Rightarrow \angle \text{of elevation}$ } $\angle FPB \cong \angle TBP$



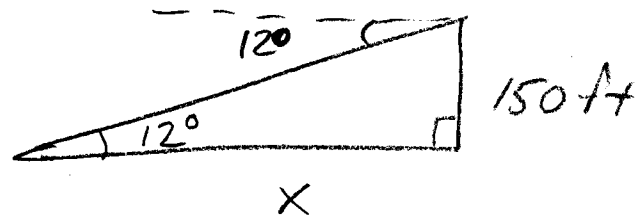
$$\Rightarrow \begin{array}{r} 5280 \\ 50 \\ \hline 264000 \text{ ft} \end{array}$$

$$\tan e = \frac{10000}{264000} = \frac{5}{132} \approx .0379$$

$$\tan^{-1}(.0379) \approx 2^\circ (\text{table})$$

$$\approx 2.169 \approx 2.2^\circ (\text{calculator})$$

⑦.



$$\tan 12^\circ = \frac{150}{x}$$

$$.2126 = \frac{150}{x}$$

$$\frac{x(.2126)}{.2126} = \frac{150}{.2126} \quad \boxed{\text{=}}$$

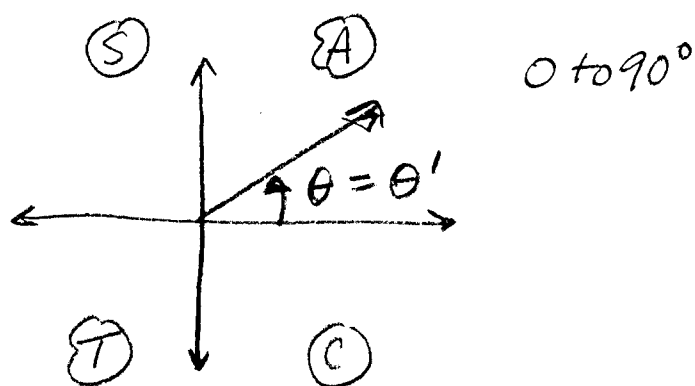
$$x = 705.55$$

$$\boxed{x \approx 706 \text{ ft}}$$

Finding $\sin$, $\cos$, $\tan$ for $\angle$ s greater than 90°

If θ is your angle

Let θ' be the Reference Angle



Signs of $\angle$ s

(A) ALL +

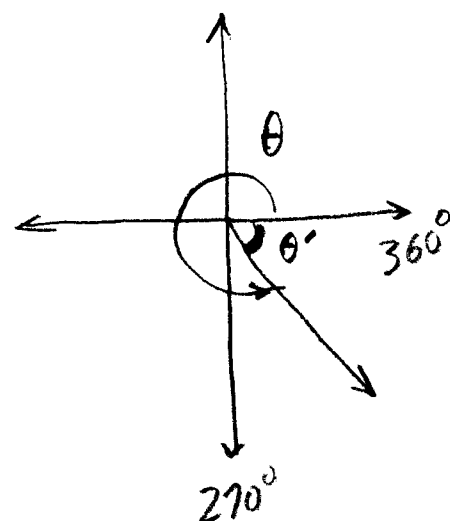
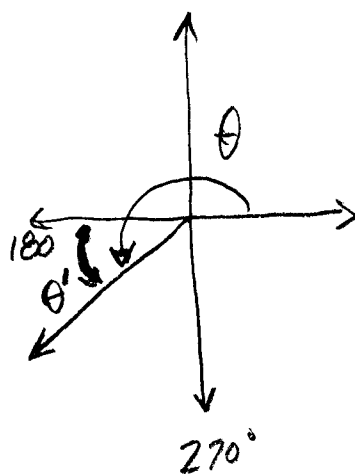
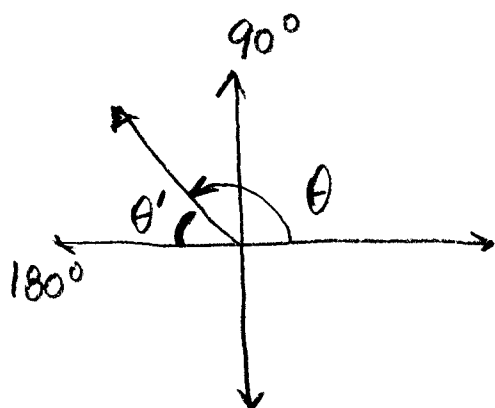
(S) ONLY $\sin$ +

(T) ONLY $\tan$ +

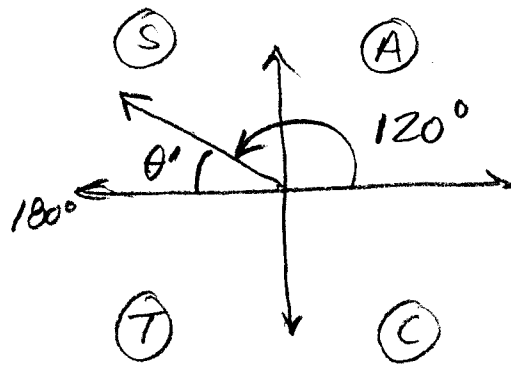
(C) ONLY $\cos$ +

Memory Aid

"A Smart Trig Class"

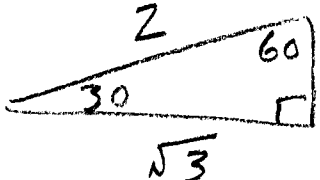


EX $\sin 120^\circ$

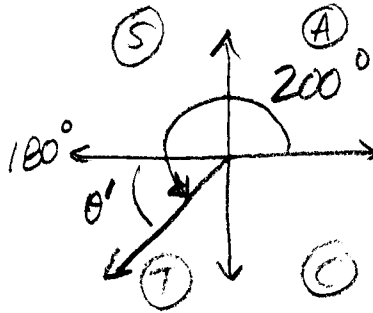


$$\theta' = 60$$

$$\therefore \sin 120^\circ = +\sin 60 = .8660$$

BTW  $\sin 60 = \frac{\sqrt{3}}{2} = .8660$

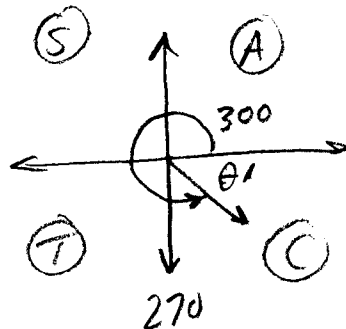
EX $\cos 200^\circ$



$$\theta' = 20^\circ \quad \therefore \cos 200^\circ = -\cos 20^\circ$$

$$= -.9397$$

EX $\tan 300^\circ$



$$\theta' = 60^\circ$$

$$\therefore \tan 300^\circ = -\tan 60^\circ = -1.7321$$

Homework:

Find the $\sin$, $\cos$, $\tan$ for:

10° , 135° , 240° , and 330°

(make quadrant and θ , θ' labels and label each quadrant A, S, T, C)

"A Smart Trig Class"