

BE-Geometry / Tuesday 11-16-10

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

Find the exact values of

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

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

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

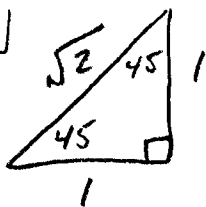
Hint: 45-45-90

1 : 1 : $\sqrt{2}$

30-60-90

1 : $\sqrt{3}$: 2

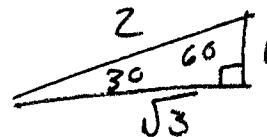
ANS



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

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

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



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

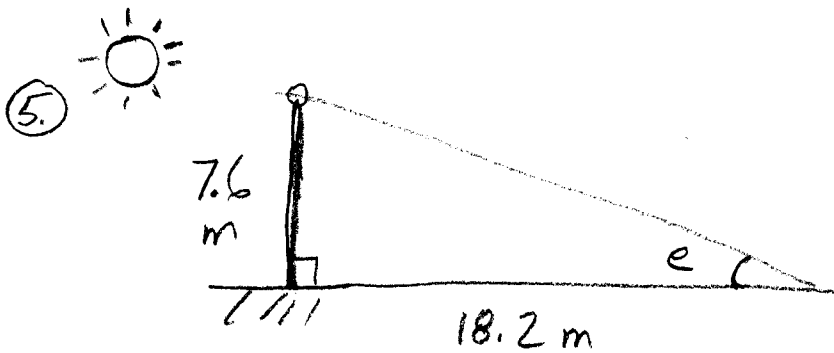
$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

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

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

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

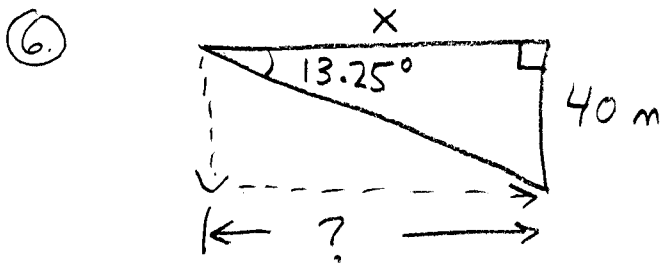
$$\tan 60^\circ = \frac{\sqrt{3}}{1}$$



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

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

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



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

$$x = \frac{40}{0.2355}$$

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

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

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

$$\text{diff} = .2493 \therefore \tan 13.25$$

$$- .2309$$

$$\hline .0184$$

$$\text{times } .25 \hline .25$$

$$0920$$

$$\hline 0368$$

$$\hline .004600$$

6 places

$$= .2309$$

$$+ .0046$$

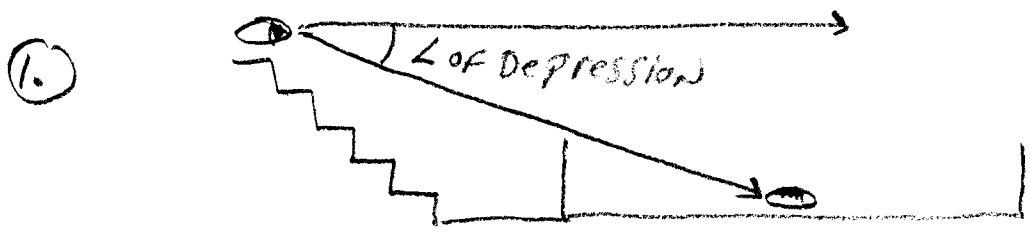
$$\hline .2355$$



$$.23546 \checkmark$$

↑
LINEAR INTERPOLATION

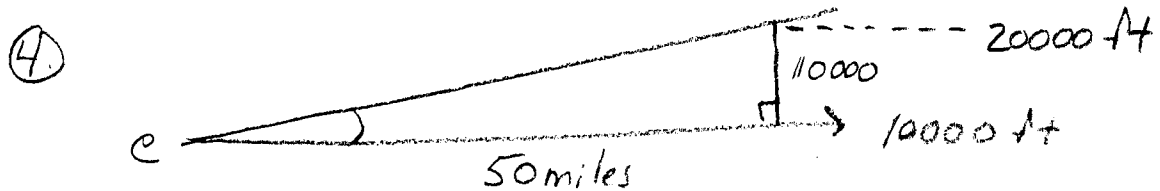
Homework Review: Pg. 373 # 1-7



FOOTBALL STANDS TO FIELD.

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

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



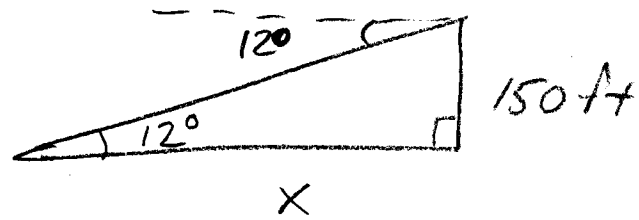
$$\Rightarrow \frac{5280}{50} = 264000 \text{ ft}$$

$$\tan e = \frac{10000}{264000} = \frac{5}{132} \approx 0.0379$$

$$\tan^{-1}(0.0379) \approx 2^\circ \text{ (table)}$$

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

⑦



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

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

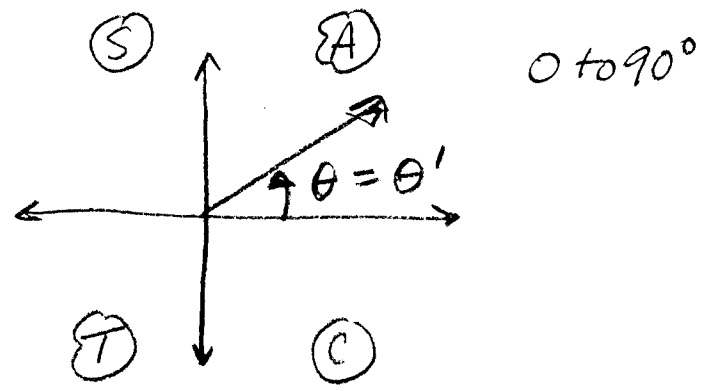
$$\frac{x(.2126)}{.2126} = \frac{150}{.2126} \quad \boxed{\equiv}$$

$$x = 705.55$$

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

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

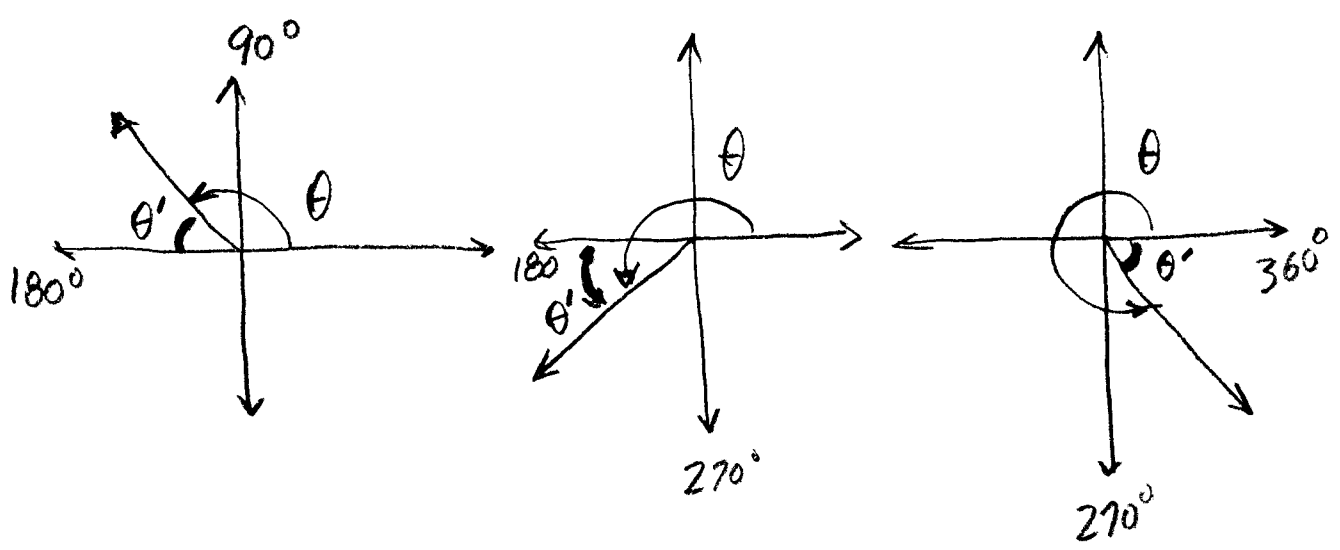
If θ is your angle
Let θ' be the reference angle



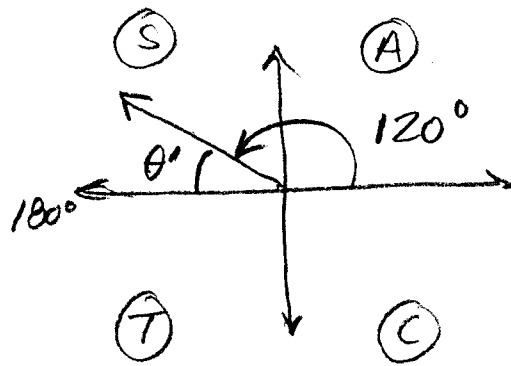
Signs of \angle s

- (A) ALL +
- (S) ONLY SIN +
- (T) ONLY TAN +
- (C) ONLY COS +

Memory Aid
"A Smart Trig Class"

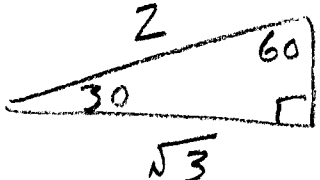


(EX) $\sin 120^\circ$

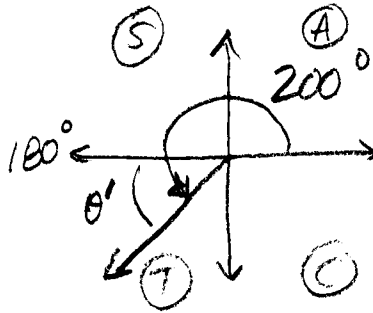


$$\theta' = 60$$

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

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

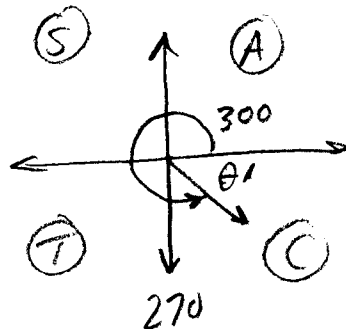
(EX) $\cos 200^\circ$



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

$$= -0.9397$$

(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"