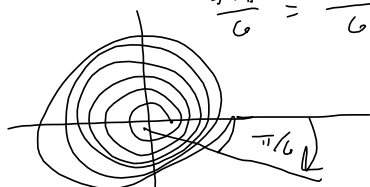


$$\frac{71\pi}{6}$$

$$\frac{71\pi}{6} = \frac{72\pi}{6} - \frac{\pi}{6} = 12\pi - \frac{\pi}{6} \longleftrightarrow -\frac{\pi}{6}$$



Meh. Easier with degrees

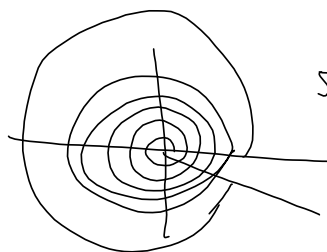
$$\left(\frac{71\pi}{6}\right)\left(\frac{180^\circ}{\pi}\right) = 2130 \quad \text{Find the remainder upon division by } 360^\circ$$

$$\frac{2130}{360} = 5.9166\dots \quad (\text{Find } 2130^\circ \bmod 360^\circ)$$

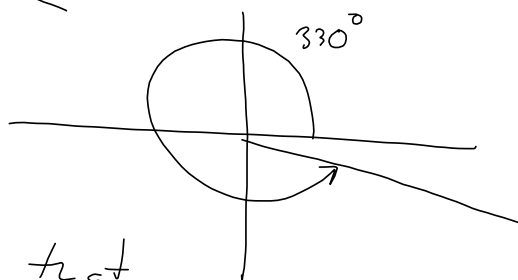
\downarrow 5.9166 times around the circle.

The .9166 is what we want.

$$2130 - 5 \cdot 360 = 330^\circ \quad \frac{2130}{360} = 5 + .9166$$



5 times around plus 330°
OR just



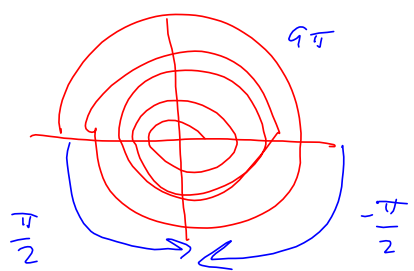
$$\boxed{330^\circ} = \frac{11\pi}{6}$$

Subtract 360° from that

$$330^\circ - 360^\circ = \boxed{-30^\circ} = -\frac{\pi}{6}$$

$$\frac{57\pi}{6} = \frac{54\pi}{6} + \frac{3\pi}{6} = 9\pi + \frac{\pi}{2}$$

ODD. So like " π "



$$\frac{3\pi}{2}, \frac{3\pi}{2} - \frac{4\pi}{2} = \left[\frac{-\pi}{2}, \frac{3\pi}{2} \right]$$

$-90^\circ, 270^\circ$

Julio didn't like my S1.3 #176 & he was right.

$$\left(\frac{57\pi}{6} \right) \left(\frac{180^\circ}{\pi} \right) = 1710^\circ \rightsquigarrow \frac{1710^\circ}{360^\circ} = 4.75$$

$$\begin{array}{r} 2 \ 57 \\ \underline{ 3} \\ 171 \end{array}$$

$$\begin{aligned} &1710 - 4 \cdot 360 \\ &= 1710 - 1440 \\ &= \boxed{270^\circ} = \text{Residue, mod } 360^\circ \\ &\text{of } \frac{57\pi}{6} = 1710^\circ \end{aligned}$$

$\rightarrow 270^\circ \in [-360^\circ, 360^\circ]$. The other one is -90°

Convert to radians

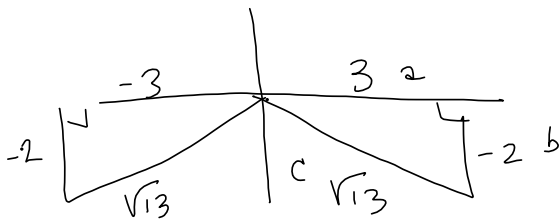
Arc length $s = r\theta$ $r = 7\text{cm}$
 $\theta = 892^\circ$

$$= (7\text{cm}) (892^\circ) \left(\frac{\pi}{180^\circ}\right)$$

Must convert to radians for arc length
 AND AREA!

$$\sin \theta = -\frac{2}{\sqrt{13}}$$

Draw picture for this



$$\sqrt{\sqrt{13}^2 - (-2)^2} = \sqrt{13 - 4} = \sqrt{9} = 3$$

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

$$(-2)^2 + b^2 = \sqrt{13}^2$$

$$\cos \theta = -\frac{3}{5}$$

Un-possible!

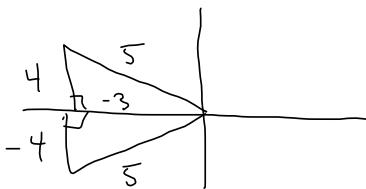
$$4 + b^2 = 13$$

$$b^2 = 9$$

$$b = \pm 3$$

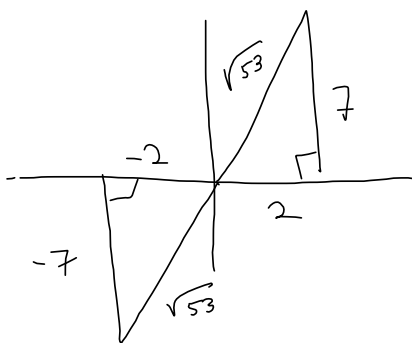
$$\cos \theta = -\frac{3}{5}$$

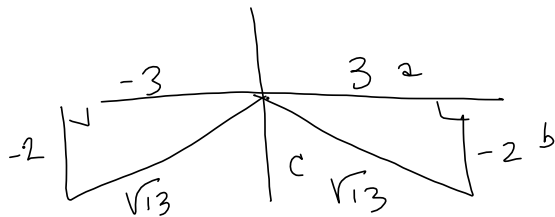
$$\sqrt{5^2 - (-3)^2} = \sqrt{25 - 9} = \sqrt{16} = 4$$



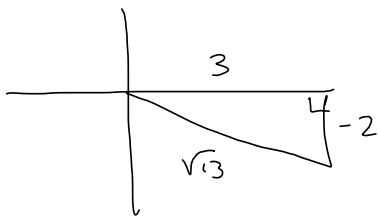
$$-\tan \theta = \frac{7}{2}$$

$$\sqrt{2^2 + 7^2} = \sqrt{4 + 49} = \sqrt{53}$$





∴ terminal side is in Q III.



Find the rest of
the trig functions of θ

$$\sin \theta = -\frac{2}{\sqrt{13}}$$

$$\csc \theta = -\frac{\sqrt{13}}{2}$$

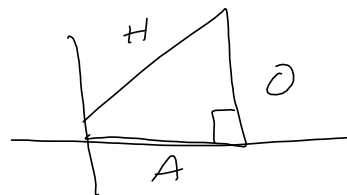
$$\cos \theta = -\frac{3}{\sqrt{13}}$$

$$\sec \theta = -\frac{\sqrt{13}}{3}$$

$$\tan \theta = \frac{2}{3}$$

$$\cot \theta = \frac{3}{2}$$

SOHCAHTOA

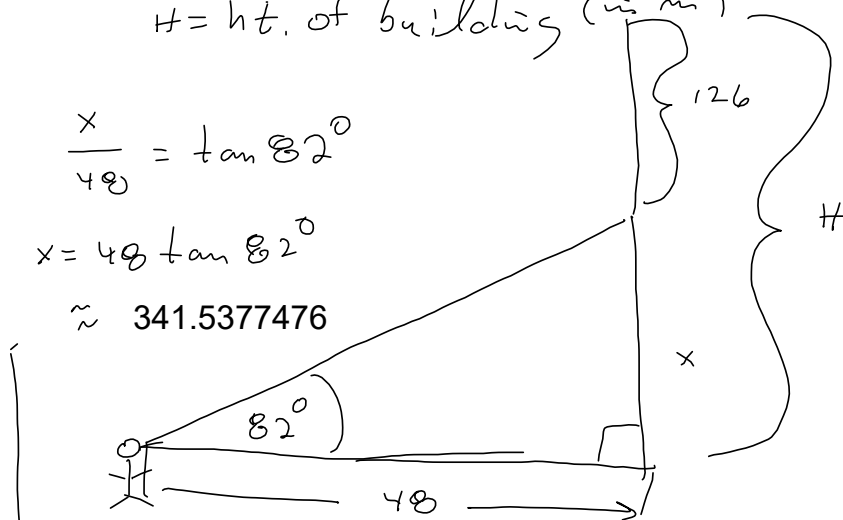


Let $x =$ ht to top of 86th floor (in m) } Lexicon
 $H =$ ht. of building (in m)

$$\frac{x}{48} = \tan 82^\circ$$

$$x = 48 \tan 82^\circ$$

$$\approx 341.5377476$$



$$\Rightarrow H = x + 126 \approx 341.5377476 + 126$$

$$\approx 467.5377476 \approx \boxed{467.5 \text{ m} \approx} H$$

NEXT TIME: COLLECTING 1.2 AND 1.4 BY END OF PERIOD.

YOU SHOULD BE ON 1.2, 1.4 RIGHT NOW.

YOUR UNDERSTANDING > GETTING EVERY PROBLEM DONE.

WORK ENOUGH OF A TYPE PROBLEM TO GET THE IDEA. WORK MORE, LATER, TO MAKE SURE THAT YOU HAVE THE SKILL MASTERED.

THIS ISN'T DOING HOMEWORK FOR POINTS. THIS IS DOING HOMEWORK FOR MASTERY.

$$\sec^2 \theta = \tan^2 \theta + 1 \quad (a-b)(a+b) = a^2 - b^2$$

$$\begin{aligned} & (\sec \theta - \tan \theta)(\sec \theta + \tan \theta) \\ &= \sec^2 \theta - \tan^2 \theta = \sec^2 \theta - (\sec^2 \theta - 1) \end{aligned}$$

$$= \sec^2 \theta - \sec^2 \theta + 1 = 1$$

$$\sec^2 \theta = \frac{1}{\cos^2 \theta}$$

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

$$\begin{aligned} \tan^2 \theta + 1 &= \frac{\sin^2 \theta}{\cos^2 \theta} + 1 = \\ &= \frac{\sin^2 \theta}{\cos^2 \theta} + \frac{\cos^2 \theta}{\cos^2 \theta} = \frac{\sin^2 \theta + \cos^2 \theta}{\cos^2 \theta} \\ &= \frac{1}{\cos^2 \theta} = \sec^2 \theta \end{aligned}$$