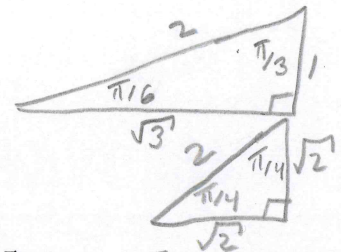


MHF4U – Trigonometry Quiz



1. Convert the following angles to degrees.

a) $\frac{11\pi}{6} = \frac{11\pi}{6} \times \frac{180^\circ}{\pi} = 330^\circ$ b) $\frac{11\pi}{9} = \frac{11\pi}{9} \times \frac{180^\circ}{\pi} = 220^\circ$ c) $-\frac{5\pi}{2} = -\frac{5\pi}{2} \times \frac{180^\circ}{\pi} = -450^\circ$

2. Convert the following to radian measure.

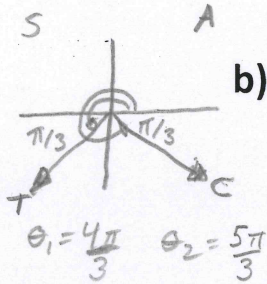
a) $290^\circ = 290^\circ \times \frac{\pi}{180^\circ} = \frac{29\pi}{18}$ b) $390^\circ = 390^\circ \times \frac{\pi}{180^\circ} = \frac{39\pi}{18} = \frac{13\pi}{6}$ c) $-150^\circ = -150^\circ \times \frac{\pi}{180^\circ} = -\frac{5\pi}{6}$

3. Solve the following; $0 \leq \theta \leq 2\pi$.

a) $\sin\theta = -\frac{\sqrt{3}}{2}$

$\theta = \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

R.A. = $\frac{\pi}{3}$

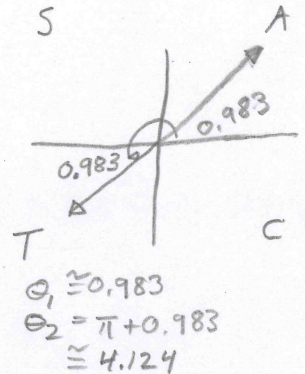


b) $\tan\theta = 1.5$

$\theta = \tan^{-1}(1.5)$

$\theta = 0.983$

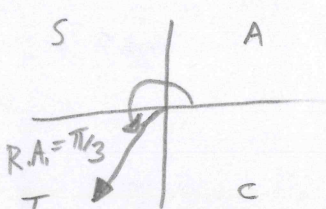
R.A.



4. Determine the exact values of the following:

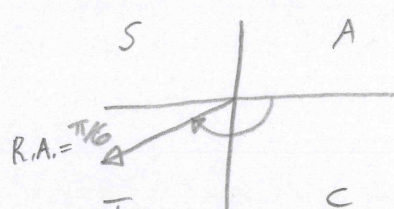
a) $\sin\left(\frac{4\pi}{3}\right) = -\sin\left(\frac{\pi}{3}\right)$

$= -\frac{\sqrt{3}}{2}$



b) $\cos\left(-\frac{5\pi}{6}\right) = -\cos\left(\frac{\pi}{6}\right)$

$= -\frac{\sqrt{3}}{2}$



5. The bicycle wheel that has a radius of 30 cm is spinning 40 times every two seconds.

a) What is the angular rate for which the wheel is turning?

$\omega = \frac{\Delta\theta}{\Delta t} = \frac{40 \times 2\pi}{2s} = 40\pi \text{ rad/s}$

b) How far will the bike travel in 5 minutes?

$\theta = \omega t$
 $= 40\pi \text{ rad/s} \times 300 \text{ seconds}$
 $= 12000\pi \text{ rads}$

$a = \frac{v}{r}$
 $v = r\omega$

$d = 30 \text{ cm} \times 12000\pi \text{ rads}$
 $= 11.3 \text{ km}$

6. What is $\tan\frac{\pi}{2}$? Why?

Undefined.

$\tan\left(\frac{\pi}{2}\right) = \frac{\sin\left(\frac{\pi}{2}\right) \leftarrow 1}{\cos\left(\frac{\pi}{2}\right) \leftarrow 0} = \frac{1}{0}$