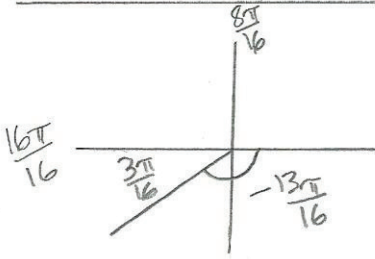


TRIGONOMETRIC FUNCTIONS - REVIEWING THE FIRST THREE LESSONS
SOLUTIONS

#1)



$$\text{R.A.A.} = \frac{3\pi}{16}$$

#2)

$$180^\circ = \pi \text{ rad}$$

$$1^\circ = \frac{\pi}{180} \text{ rad}$$

$$126^\circ = \frac{126\pi}{180} \text{ rad}$$

$$126^\circ \doteq \underline{\underline{2.2 \text{ rad}}}$$

#3)

$$\pi \text{ rad} = 180^\circ$$

$$\frac{9\pi}{7} \text{ rad} = \frac{9(180^\circ)}{7}$$

$$\frac{9\pi}{7} \text{ rad} \doteq \underline{\underline{231.4^\circ}}$$

#4)

$$\pi \text{ rad} = 180^\circ$$

$$1 \text{ rad} = \frac{180^\circ}{\pi}$$

$$5 \text{ rad} = 5 \left(\frac{180^\circ}{\pi} \right)$$

$$5 \text{ rad} \doteq \underline{\underline{286.48^\circ}}$$

#5)

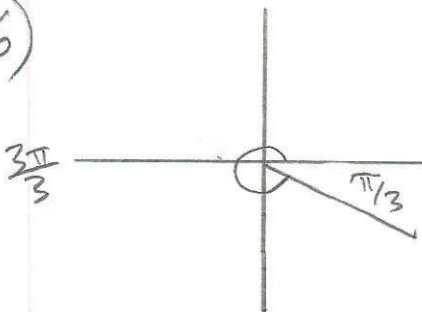
$$180^\circ = \pi \text{ rad}$$

$$1^\circ = \frac{\pi}{180} \text{ rad}$$

$$76^\circ = \frac{76\pi}{180} \text{ rad}$$

$$76^\circ = \underline{\underline{\frac{19\pi}{45} \text{ rad}}}$$

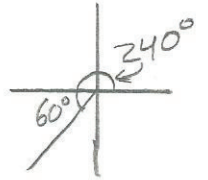
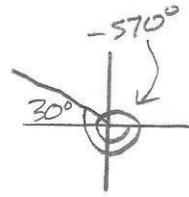
#6)



$$\sin\left(\frac{5\pi}{3}\right) = -\sin\frac{\pi}{3}$$

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

$$\begin{aligned}
 \#7) \quad & \sec(-570^\circ) - \tan^2(240^\circ) \\
 &= -\sec 30^\circ - \tan^2 60^\circ \\
 &= -\frac{2}{\sqrt{3}} - (\sqrt{3})^2 \\
 &= -\frac{2}{\sqrt{3}} - 3 \\
 &= -\frac{2\sqrt{3}}{3} - \frac{9}{3} \\
 &= \frac{-2\sqrt{3}-9}{3} \quad \left(\text{or } -\frac{2\sqrt{3}+9}{3} \right)
 \end{aligned}$$



$$\begin{aligned}
 \#8a) \quad & 180 \text{ rotations in 4 min} \\
 & 180 \text{ rotations in 240 sec} \\
 & \frac{180}{240} \text{ rotations in 1 sec} \\
 & \frac{3}{4} \text{ rotations in 1 sec} \\
 & 2\pi\left(\frac{3}{4}\right) \text{ rad in 1 sec} \\
 & \underline{\underline{\frac{3\pi}{2} \text{ rad/sec}}} \quad (\text{approx. } 4.7 \text{ rad/sec})
 \end{aligned}$$

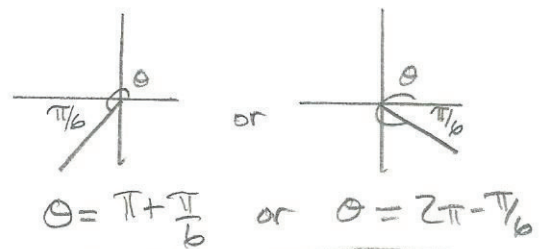
$$\begin{aligned}
 b) \quad & \frac{3\pi}{2} \text{ rad in 1 sec} \\
 & 60\left(\frac{3\pi}{2}\right) \text{ rad in 1 min} \\
 & 90\pi \text{ rad in 1 min} \\
 & 270\pi \text{ rad in 3 min}
 \end{aligned}$$

$$\theta = \frac{a}{r}$$

$$270\pi = \frac{a}{4.5}$$

$$\begin{aligned}
 a &= 1215\pi \\
 a &\doteq \underline{\underline{3817.0 \text{ cm}}}
 \end{aligned}$$

$$\begin{aligned}
 \#9) \quad & \csc \theta = -2 \\
 & \sin \theta = -\frac{1}{2} \quad \text{sin is -ve} \\
 & \text{R.A.A.} = \frac{\pi}{6} \quad \text{Quod. III + IV}
 \end{aligned}$$



$$\theta = \pi + \frac{\pi}{6} \quad \text{or} \quad \theta = 2\pi - \frac{\pi}{6}$$

$$\theta = \frac{7\pi}{6} \quad \text{or} \quad \theta = \frac{11\pi}{6}$$

$$\#10) \{x \in \mathbb{R} \mid x \neq \frac{\pi}{2} + \pi k, k \in \mathbb{Z}\}$$