

Check-Up:

Solve:

$$\textcircled{1} \cot \theta = 0.7834, -\frac{\pi}{2} < \theta < -\pi$$

$$\textcircled{2} 3\cos x + 5 = 6, -360^\circ \leq x \leq 720^\circ$$

$$\textcircled{3} 2\csc x (1 - \csc x) = 0, -4\pi < x < 4\pi$$

① $\cot \theta = 0.7834$, $\left(\text{Ref } \underline{52^\circ}, \text{ Q1,3} \right)$

$\theta = \cancel{52^\circ}, 232^\circ$

$\frac{-\pi}{2} < \theta < -\pi$

$$\begin{aligned} -128^\circ &= \frac{-128\pi}{180} \\ &= -\frac{32\pi}{45} \end{aligned}$$

$$\textcircled{2} \quad 3\cos x + 5 = 6, \quad -360^\circ \leq x \leq 720^\circ$$

$$\begin{aligned} 3\cos x &= 1 \\ \cos x &= \frac{1}{3} \\ (\text{Reflected } 71^\circ, \text{ QI, II}) \\ x_{360} &= 360^\circ - 71^\circ = 289^\circ \\ x_{360} &= 360^\circ - 180^\circ - 71^\circ = 109^\circ \\ \theta &= \pm 71^\circ, \pm 289^\circ, 431^\circ, 649^\circ \end{aligned}$$

A hand-drawn coordinate system with a horizontal x-axis and a vertical y-axis. An angle x is drawn in the first quadrant, measured from the positive x-axis. A reference angle theta is drawn in the second quadrant, measured from the negative x-axis. Another angle 360 - theta is drawn in the fourth quadrant, measured from the positive x-axis.

$$\textcircled{3} \quad 2\csc x(1 - \csc x) = 0, \quad -4\pi < x < 4\pi \quad \text{S } \omega = \frac{12}{6}$$

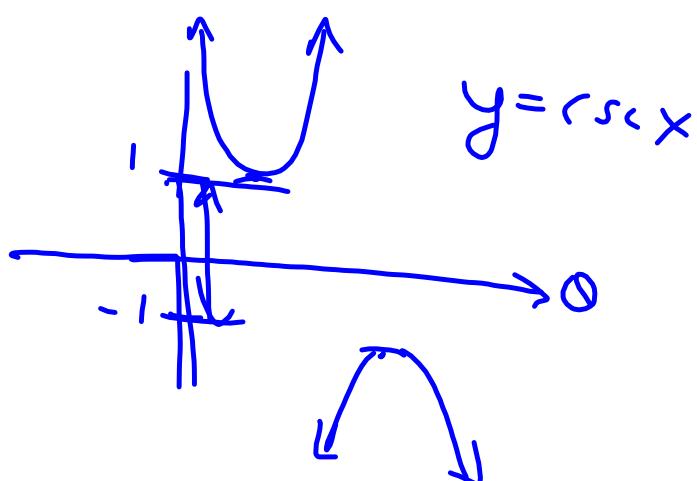
$$2\csc x = 0 \text{ or } 1 - \csc x = 0$$

$\csc x = 0$

Reciprocal of y -coordinate
to be 0

 $\csc x = \frac{r}{y}$
 $\csc x = \frac{1}{0}$ $\xrightarrow{\text{impossible}}$
 $\csc x = -1$
 $\csc x = 1$
 $x = \frac{\pi}{2}, \frac{5\pi}{2}, -\frac{3\pi}{2}, -\frac{7\pi}{2}$
 $\sin x = \frac{y}{r} = \text{und.}$

$$\csc x = \frac{1}{0} \xrightarrow{\text{impossible}} \text{und.}$$



Let's move onto QUADRATIC trigonometric equations...

...Pre-Calculus 110

- What strategies can we use to solve quadratic equations?
- Quadratic trigonometric equations will ultimately become TWO linear trigonometric equations.

$$\text{Solve: } 2x^2 + x = 1$$

$$\begin{aligned} & 2x^2 + x - 1 = 0 \\ & 2x^2 + 2x - x - 1 = 0 \\ & 2x(x+1) - 1(x+1) = 0 \\ & (x+1)(2x-1) = 0 \end{aligned}$$

$$\begin{aligned} x+1 &= 0 \quad \text{or} \quad 2x-1 = 0 \\ x &= -1 \quad \text{or} \quad x = \frac{1}{2} \end{aligned}$$

OR ...

Quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$2x^2 + x - 1 = 0$$

$$a=2, b=1, c=-1$$

$$x = \frac{-1 \pm \sqrt{1 - 4(2)(-1)}}{2(2)}$$

$$x = \frac{-1 \pm \sqrt{9}}{4}$$

$$x = \frac{-1 \pm 3}{4}$$

$$x = \frac{2}{4} \quad \text{or} \quad x = \frac{-4}{4}$$

$$x = \frac{1}{2} \quad x = -1$$

$$\text{Solve: } 2\sin^2 x + \sin x = 1, \quad 0 \leq x \leq 4\pi$$

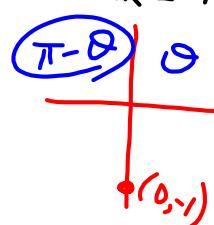
$$\text{Let } m = \sin x$$

$$2m^2 + m = 1$$

:

$$m = -1 \quad \text{or} \quad m = \frac{1}{2}$$

$$\sin x = -1$$



$$\sin x = \frac{1}{2}$$

(Reflex 30° ($\frac{\pi}{6}$) Q1, 2)

$$x = \frac{\pi}{6}, \frac{5\pi}{6}$$

$$x = \frac{3\pi}{2}, \frac{7\pi}{2}$$

$$\begin{aligned} & \frac{3\pi}{2} + 2\pi \\ & \frac{3\pi}{2} + 4\pi \\ & \frac{7\pi}{2} \end{aligned}$$

Attachments

Worksheet - Sketching Angles in Radians.doc

Warm-Up - Intro to Limits.docx

Review - Factoring.pdf

Worksheet - Factoring Review.doc