

Today's Learning Goal(s):

Date: _____

By the end of the class, I will be able to:

- a) determine the **exact** values of trig ratios.
- b) solve a trig equation.

Last day's work: pp. 299-300 #(1 – 5)bd
Standard Posion Wkst#1
8-3 1cd, 2bc, 6, 7a, 9

5.4 Evaluating Trigonometric Ratios for $0^\circ \leq \theta \leq 360^\circ$ (Day 3)

Date: Nov. 18/15

Ex. 1

SYR CXR TYX

The angle, θ , lies in **quadrant 2** with $0^\circ \leq \theta \leq 360^\circ$.

a) Determine the **exact** values of the primary trigonometric ratios for θ .

$$\cos \theta = -\frac{2}{3} \quad \left(\frac{x}{r} \right)$$

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

$$x^2 + y^2 = r^2$$

$$y^2 = r^2 - x^2$$

$$= (3)^2 - (-2)^2$$

$$y^2 = 9 - 4$$

$$y^2 = 5$$

$$y = \pm \sqrt{5}$$

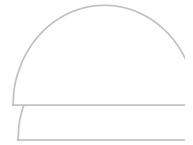
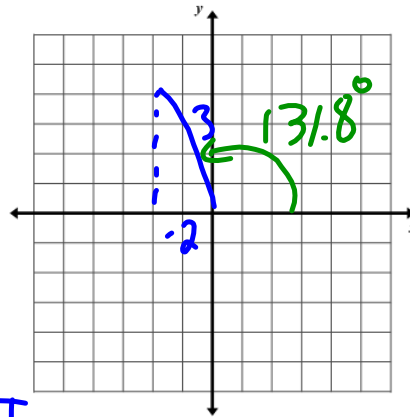
but in QII
 $\therefore y = \sqrt{5}$

$$\therefore \sin \theta = \frac{y}{r} = \frac{\sqrt{5}}{3}$$

$$\tan \theta = \frac{y}{x} = \frac{\sqrt{5}}{-2} = -\frac{\sqrt{5}}{2}$$

$$\sin \theta = \frac{\sqrt{5}}{3}$$

$$\tan \theta = -\frac{\sqrt{5}}{2}$$



b) Find θ , to the nearest degree.

$$\cos \theta = -\frac{2}{3}$$

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

$$\approx 131.8^\circ$$



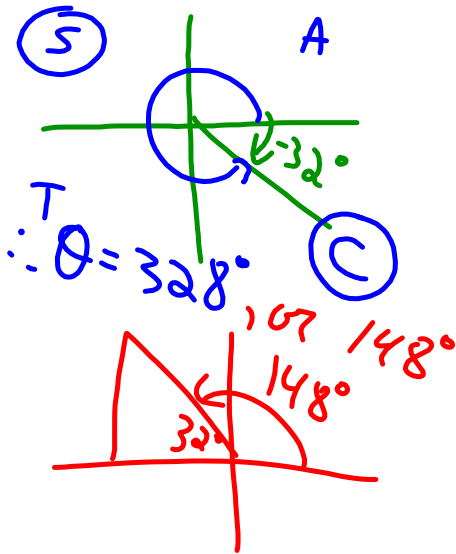
Ex.2 Solve for $0 \leq \theta \leq 360^\circ$. Round to the nearest degree.

a) $\tan\theta = -0.6249$

$$\theta = \tan^{-1}(-0.6249)$$

$$\approx -32.0$$

$$\approx -32^\circ$$



148°, 328°

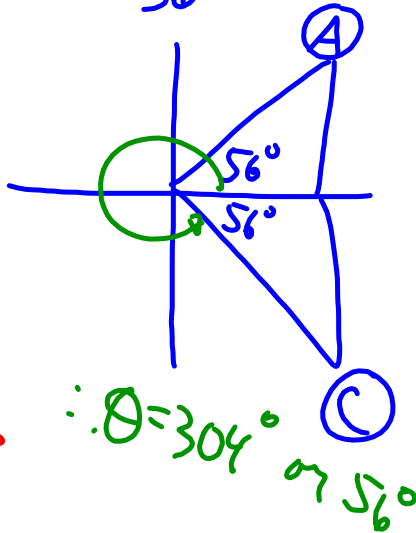


b) $\cos\theta = 0.5592$

$$\theta = \cos^{-1}(0.5592)$$

$$\approx 55.9$$

$$\approx 56^\circ$$



$$\therefore \theta = 304^\circ \text{ or } 56^\circ$$

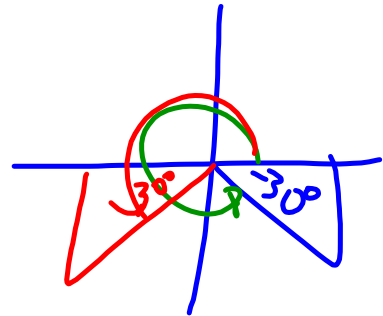
56°, 304°



c) $\sin\theta = -0.5$

$$\theta = \sin^{-1}(-0.5)$$

$$= -30^\circ$$



$$\theta = 330^\circ \text{ or } \theta = 210^\circ$$



210°, 330°

Ex.3 Determine the values of θ , if $\sec\theta = -\frac{2\sqrt{3}}{3}$, and $0^\circ \leq \theta \leq 360^\circ$.

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

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

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

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

$$= \frac{3\sqrt{3}}{-6}$$

$$= -\frac{1}{2}\sqrt{3}$$

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

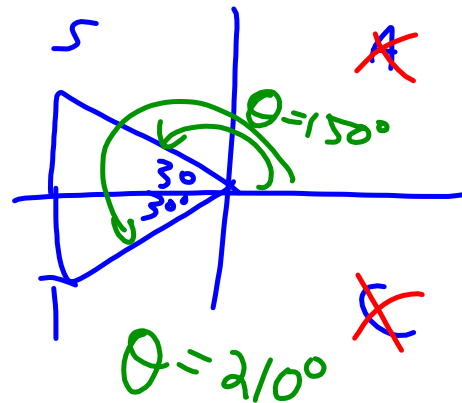
$$\rightarrow \cos\theta = -\frac{\sqrt{3}}{2}$$

150°, 210°

∴ if $\cos\theta = \frac{\sqrt{3}}{2}$

then $\theta = 30^\circ$

∴ RAA = 30°



Are there any Homework Questions you would like to see on the board?

Last day's work: pp. 299-300 #(1 – 5)bd
Standard Posion Wkst#1
8-3 1cd, 2bc, 6, 7a, 9

Today's Homework Practice includes:

pp. 300-301 #6 – 9ace, 10, 12 [15]

Review p. 304 #1 – 13