Date: _____

Today's Learning Goal(s):

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

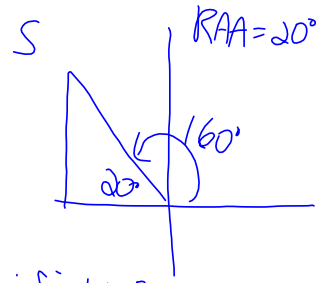
a) determine the **exact** values of trig ratios.
b) solve a trig equation.

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

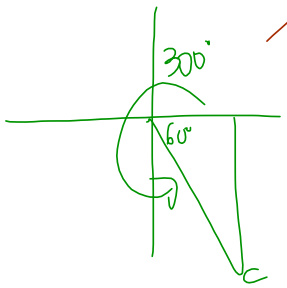
Return and correct Unit 4 Summative at end of lesson?

p. 299 **4.** Use the related acute angle to state an equivalent expression.

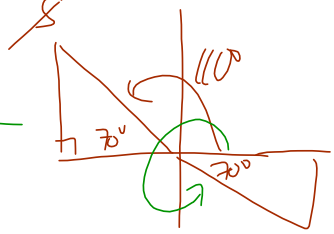
a) $\sin 160°$ b) $\cos 300°$ c) $\tan 110°$ d) $\sin 350°$



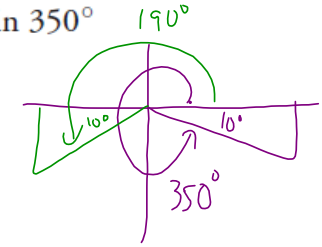
$\therefore \sin 160° = +\sin 20°$



$\therefore \cos 300° = +\cos 60°$



$\tan 110° = -\tan 70°$
$= \tan 290°$



$\sin 350° = -\sin 10°$
or $= \sin 190°$

5.4 Evaluating Trigonometric Ratios for $0^o \le \theta \le 360^o$ (Day3)

Date: Apr 29/19

Ex.1

The angle, θ, lies in quadrant 2 with $0^o \le \theta \le 360^o$.

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

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

SYR CXR TYX

$x=-2$

$r=3$

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

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

$= 9 - 4$

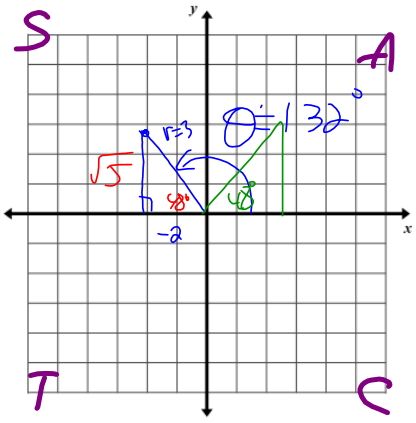
$= 5$

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

BUT in QII, $y = +\sqrt{5}$

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

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



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

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

b) Find θ, to the nearest degree.

(Show using cos vs. sin on calculator)

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

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

$\doteq 131.8$

$\doteq 132^\circ$

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

$\theta = \sin^{-1}\left(\frac{\sqrt{5}}{3}\right)$

$\beta \doteq 48.1$

$\doteq 48^\circ$

132^o

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

a) $\tan\theta = -0.6249$

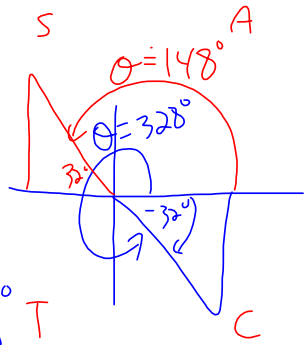
$\theta = \tan^{-1}(-0.6249)$

$\theta \doteq -32.0$

$\doteq -32^\circ$

$\therefore \beta = 32^\circ$

$\therefore \theta \doteq 328^\circ$ T



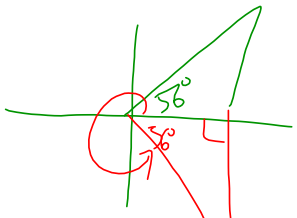
$148^o, 328^o$

b) $\cos\theta = 0.5592$

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

$\doteq 55.9$

$\beta \doteq 56^\circ$ $\therefore \theta = 56^\circ$ or



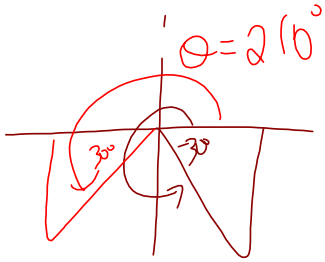
$\theta \doteq 304^\circ$

$56^o, 304^o$

c) $\sin\theta = -0.5$

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

$\beta = -30^\circ$



$\therefore \theta = 330^\circ$ or

$\theta = 210^\circ$

$210^o, 330^o$

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

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

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

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

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

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

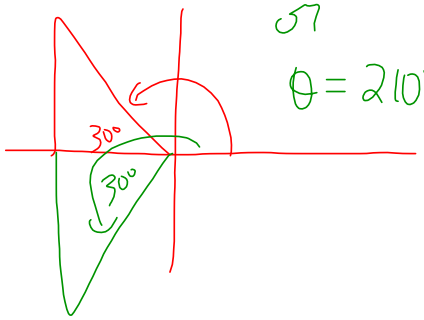
$\cos\theta = -\frac{\sqrt{3}}{2}$

$\cos\beta = \frac{\sqrt{3}}{2}$

$\beta = 30°$ $\therefore \theta = 150°$

or

$\theta = 210°$



150°, 210°

Today's Homework Practice includes:
pp. 300-301 #6 – 9ace, 10, 12 [15]
Review p. 304 #1 – 13

Be ready to Show What You Know tomorrow.