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.

2bd 5b

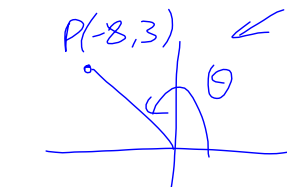Last day's work: pp. 299-300 #(1 – 5)bd
Standard Posion Wkst#1
8-3 1cd, 2bc, 6, 7a, 9

p. 299

2. Each point lies on the terminal arm of angle θ in standard position.
   i) Draw a sketch of each angle θ.
   ii) Determine the value of r to the nearest tenth.
   iii) Determine the primary trigonometric ratios for angle θ.
   iv) Calculate the value of θ to the nearest degree.

   a) $(5, 11)$ **b)** $(-8, 3)$ **c)** $(-5, -8)$ **d)** $(6, -8)$

$P(-8,3)$

$\sin\theta = \dfrac{y}{r}$ $\cos\theta = \dfrac{x}{r}$ $\tan\theta = \dfrac{y}{x}$

$= -\dfrac{8}{\sqrt{73}}$ $= \dfrac{3}{8}$

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

$= \dfrac{3}{\sqrt{73}}$

$= (-8)^2 + 3^2$

$= 64 + 9$

$= 73$

$r = \sqrt{73}$

d) $x^2 + y^2 = r^2$ $\sin\theta = \dfrac{-8}{10}$

$(6,-8)$ $(6)^2 + (-8)^2 = r^2$ $= -\dfrac{4}{5}$

$36 + 64 = r^2$ $\cos\theta = \dfrac{3}{5}$

$r = 10$

7. Each point P is on the terminal arm of an angle θ. Use a diagram to calculate $\tan\theta = \dfrac{4}{3}$
   sin θ, cos θ, and tan θ.
   a) $P(12, -5)$ **b)** $P(-4, -2)$ **c)** $P(-3, 1)$ **d)** $P(-3, -4)$
   e) $P(6, -2)$ **f)** $P(2, 9)$ **g)** $P(0, 4)$ **h)** $P(-5, 0)$
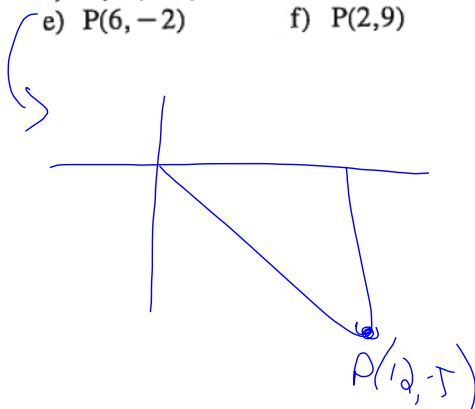
$r^2 = x^2 + y^2$ $\sin\theta = \dfrac{y}{r}$

$= 12^2 + (-5)^2$ $= \dfrac{-5}{13}$

$= 144 + 25$ $\cos\theta = \dfrac{12}{13}$

$P(12, -5)$ $= 169$

$r = \sqrt{169}$ $\tan\theta = \dfrac{-5}{12}$

$r = 13$

p. 300

5. **i)** For each angle θ, predict which primary trigonometric ratios are positive.
ii) Determine the primary trigonometric ratios to the nearest hundredth.

2 decimals

b)

$\theta = -125°$

or $\theta = 235°$

tan +

$\sin 235°$	$\cos 235°$	$\tan 235°$
$\doteq -0.819$	$\doteq -0.573$	$\doteq 1.428$
$\doteq -0.82$	$\doteq -0.57$	$\doteq 1.43$

Also $\sin(-125°)$
$\doteq -0.82$
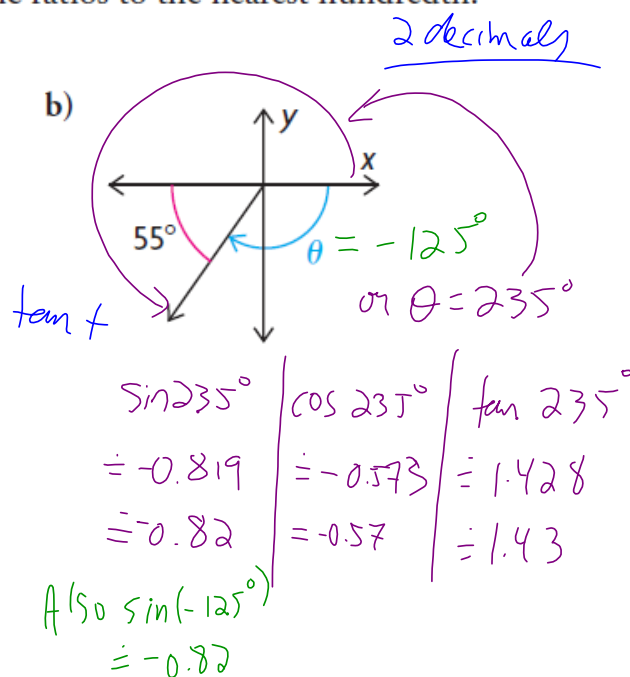
5.4　Evaluating Trigonometric Ratios for $0° \leq \theta \leq 360°$ (Day3)

Date: NOV.13/19

Ex.1

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

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

CxR

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

$X = -2$

$r = 3$

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

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

$= 9 - 4$

$= 5$

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

But in QII, $\therefore y = \sqrt{5}$

SYR

$Sin = \dfrac{y}{r}$

$Sin\theta = \dfrac{\sqrt{5}}{3}$

$\begin{cases} TYX \\ tan = \dfrac{y}{x} \\ = \dfrac{\sqrt{5}}{-2} \end{cases}$

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

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

b)　Find θ, to the nearest degree.
(Show using cos vs. sin on calculator)

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

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

$\doteq 131.8$
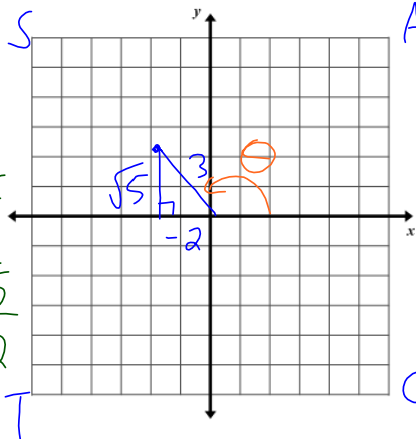
$\doteq 132°$

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

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

$\doteq 48.1$

$\doteq 48°$

132°
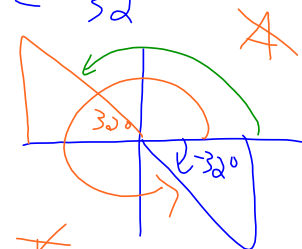
Ex.2   Solve for $0º \le \theta \le 360º$. Round to the nearest degree.

a) $\tan\theta = -0.6249$

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

$\doteq -32.0$

$\doteq -32º$

$\theta \doteq 328º$

148º, 328º

or $\theta \doteq 148º$

b) $\cos\theta = 0.5592$

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

$\doteq 55.9$

$\doteq 56º$

$\theta \doteq 56º$

or

$\theta \doteq 304$

56º, 304º

c) $\sin\theta = -0.5$

$raa = 30º$

$\theta = 210º$

$\theta = 330º$

210º, 330º
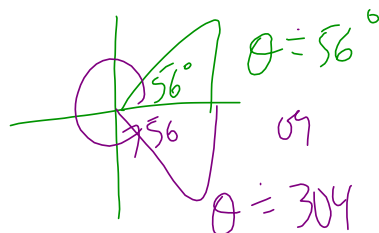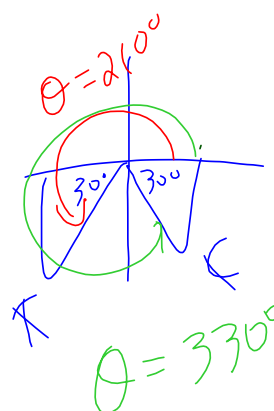
Ex.3 Determine the values of θ, if $\sec\theta = -\dfrac{2\sqrt{3}}{3}$, and $0° \leq \theta \leq 360°$.
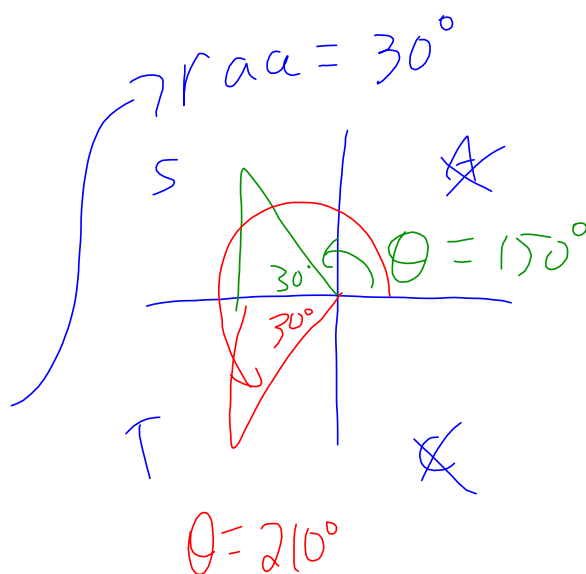
$\sec\theta = -\dfrac{2\sqrt{3}}{3}$

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

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

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

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

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

$\alpha = 30°$

S

$\theta = 150°$

30°

30°

T

$\theta = 210°$

150°, 210°

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

Be ready to Show What You Know tomorrow.