Date: _____

Today's Learning Goal(s):
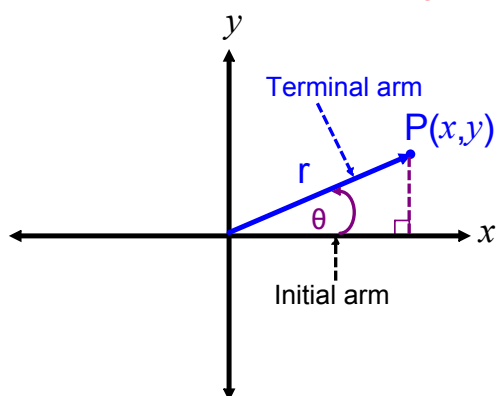
By the end of the class, I will be able to:

a) explain the relationship between the ratios of an angle in standard position, and the related acute angle (RAA).

b) determine the trig ratios of angles between $0°$ and $360°$.

Last day's work: p. 292 #1 – 4   3
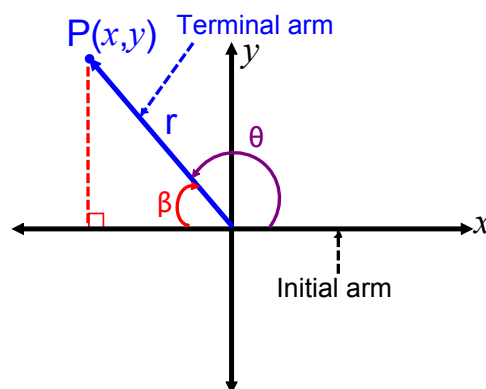
pp. 299-300 #(1 – 5)ac

(3 screens away)   3C

Defining an angle in "standard position".   **Explain: $0° \leq \theta \leq 360°$**
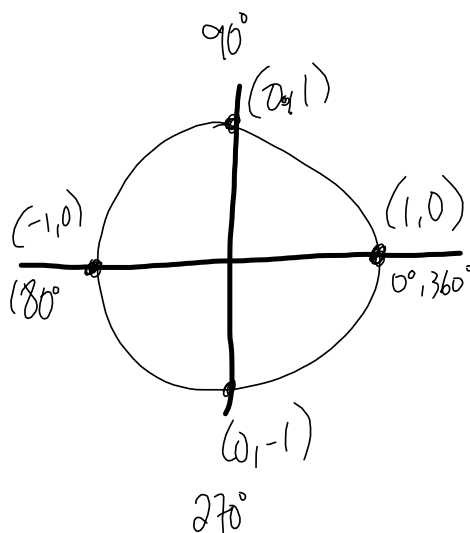
θ = Principal Angle

β = Related Acute Angle (RAA)

Note: In Quadrant I: θ = β

Memorize this Chart!

θ	30°	45°	60°
$\sin\theta$	$\dfrac{1}{2}$	$\dfrac{1}{\sqrt{2}}$ **or** $\dfrac{\sqrt{2}}{2}$	$\dfrac{\sqrt{3}}{2}$
$\cos\theta$	$\dfrac{\sqrt{3}}{2}$	$\dfrac{1}{\sqrt{2}}$ **or** $\dfrac{\sqrt{2}}{2}$	$\dfrac{1}{2}$
$\tan\theta$	$\dfrac{1}{\sqrt{3}}$ **or** $\dfrac{\sqrt{3}}{3}$	1	$\sqrt{3}$

90°

(0,1)

(-1,0)
180°

(1,0)
0°, 360°

(0,-1)
270°

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

From Wednesday: pp. 286-287 # 1 – 9

Last day's work: p. 292 #1 – 4

pp. 299-300 #(1 – 5)ac

Extra STUFF on website!

Today's Homework Practice includes:

pp. 299-300 #(1 – 5)bd

Standard Posion Wkst#8-3

1cd, 2bc, 6, 7a, 9

Worksheet #2b) Answer should be **+2**

3. Sylvie drew a special triangle in quadrant 3 and determined that
   $\tan(180° + \beta) = 1$.
   a)   What is the value of angle β?
   b)   What would be the exact value of $\tan\theta$, $\cos\theta$, and $\sin\theta$?

p. 292   **1.** State all the angles between $0°$ and $360°$ that make each equation true.

    a) $\sin 45° = \sin$ �_____

    b) $\cos$ _____ $= -\cos(-60°)$

    c) $\tan 30° = \tan$ _____

    d) $\tan 135° = -\tan$ _____

$$\frac{S \mid A}{T \mid C}$$

a) $\sin 45°$

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

$135°$

$45°$

$\therefore \sin 135°$

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

b) $\cos(-60°)$

$-60°$

$\quad 60°$

$\quad 60°$

$180°$

C

$\cos(-60°)$

$= \frac{1}{2}$

$\therefore -\cos(-60°)$

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

$\cos 120° = -\frac{1}{2}$

and $\cos 240° = -\frac{1}{2}$

p. 292

2. Using the special triangles from Lesson 5.2, sketch two angles in the Cartesian plane that have the same value for each given trigonometric ratio.

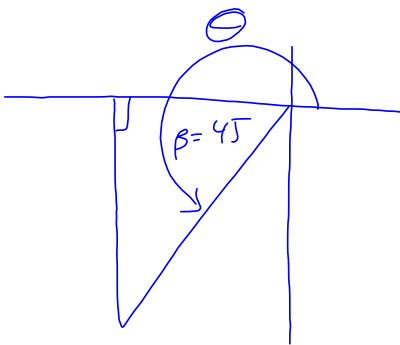   **a)** sine   **b)** cosine   **c)** tangent

a)

$150°$

2

2

$30°$

$30°$

$-\sqrt{3}$ $\sqrt{3}$

$\sin 30° = \frac{1}{2}$

$\sin 150° = \frac{1}{2}$

b)

$-\sqrt{3}$

-1

$60°$

$60°$

$-\sqrt{3}$

2

$\cos 240° = -\frac{1}{2}$

and

$\cos 120° = -\frac{1}{2}$

p. 292 **3.** Sylvie drew a special triangle in quadrant 3 and determined that
tan $(180° + θ) = 1.$
a)   What is the value of angle $θ$?
b)   What would be the exact value of tan $θ$, cos $θ$, and sin $θ$?

$tan(180°+θ)=1$

$tan((180°+45°)=1$

$tan(225°)=1$

$\begin{cases} tanβ=1 \\ β=45° \end{cases}$

$Sin\ 225°$

$= - Sin45°$

$= -\dfrac{1}{\sqrt{2}}$

$Cos\ 225°$

$= - Cos45°$

$= -\dfrac{1}{\sqrt{2}}$
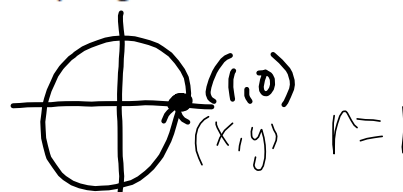
$tan\ 225°$

$= + tan45°$

$= 1$

p. 292

p. 299

3. Use the method in Example 3 to determine the primary trigonometric ratios for each given angle.

a) 180°   b) 270°   c) 360°

$(1,0)$

(x,y) $r=1$

$\sin 360°$

$= \dfrac{y}{r}$

$= \dfrac{0}{1}$

$= 0$

$\cos 360°$

$= \dfrac{x}{r}$

$= \dfrac{1}{1}$

$= 1$

$\tan 360°$

$= \dfrac{y}{x}$

$= \dfrac{0}{1}$

$= 0$

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

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