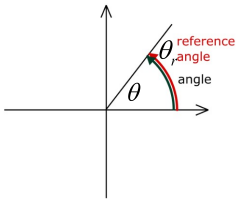
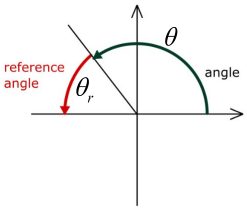
Lesson 4.1B: Angles between 0^0 and 360^0 (Day 2)

Recall:



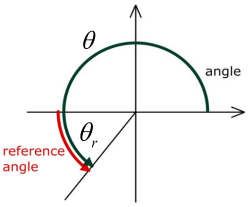
I quadrant

$\theta_r = \theta$



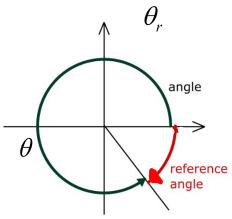
II quadrant

$\theta_r = 180 - \theta$



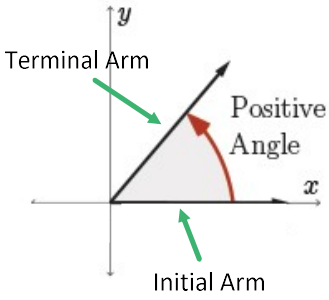
III quadrant

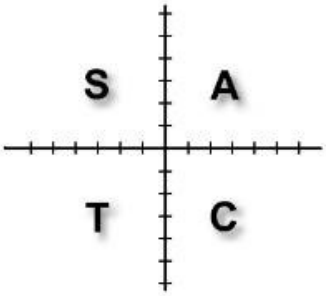
$\theta_r = \theta - 180$

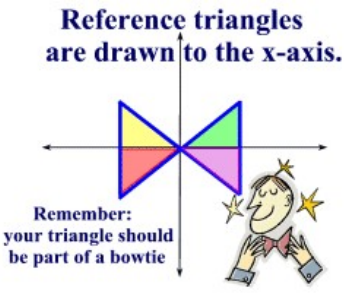


IV quadrant

$\theta_r = 360 - \theta$

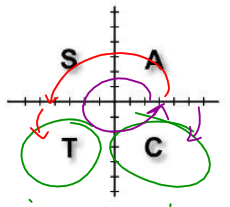






Lesson 4.1B: Angles between 0^0 and 360^0 (Day 2)

Ex. 1: Determine all angles between 0^0 and 360^0 that have the following trig ratios. Include a diagram.



Sine is negative

a) $\sin A = -0.4752$

Sine is negative in which quadrants?

NOTE
Calc will always try to give smallest #

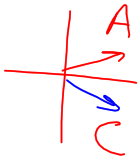
$A = \sin^{-1}(-0.4752)$
$\doteq -28°$
$\theta_r = 28°$

Q3
$\theta = 180 + 28$
$= 208°$

Q4
$\theta = 360 - 28$
$= 332°$

$\therefore \theta = 208°, 332°$

b) $\cos A = \frac{1}{3}$



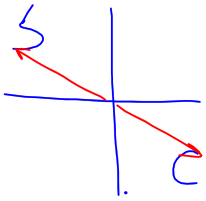
$A = \cos^{-1}\left(\frac{1}{3}\right)$
$\doteq 71°$
$\theta_r = 71°$

Q_1
$\theta = 71°$

Q_4
$\theta = 360 - 71$
$= 289°$

$\therefore \theta = 71°, 289°$

c) $\tan\theta = -2.14$



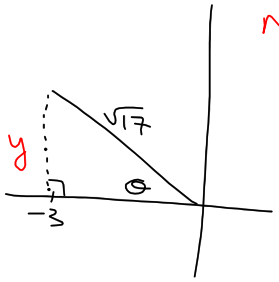
$\theta = \tan^{-1}(-2.14)$
$= -65°$
$\theta_r = 65°$

Q_2
$\theta = 180 - 65°$
$= 115°$

Q_4
$\theta = 360 - 65$
$= 295°$

$\therefore \theta = 115°, 295°$

Ex. 2: If $\cos\theta = -\frac{3}{\sqrt{17}}$ where $90^0 < \theta < 180^0$, determine $\sin\theta$ and $\tan\theta$.



Need y in order to list other ratios

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

$(\sqrt{17})^2 = (-3)^2 + y^2$

$y^2 = 17 - 9$

$y = \sqrt{8}$

$= 2\sqrt{2}$

$\sin\theta = \frac{2\sqrt{2}}{\sqrt{17}} \cdot \frac{\sqrt{17}}{\sqrt{17}}$

$= \frac{2\sqrt{34}}{17}$

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

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