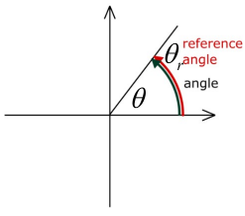
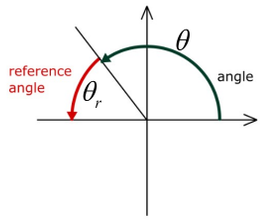
Lesson 4.1B: Angles between 0^0 and 360^0 (Day 2)

Recall:



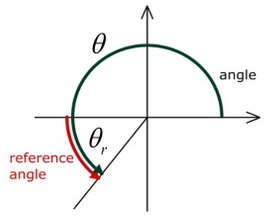
I quadrant

$\theta_r = \theta$



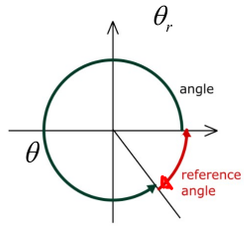
II quadrant

$\theta_r = 180 - \theta$



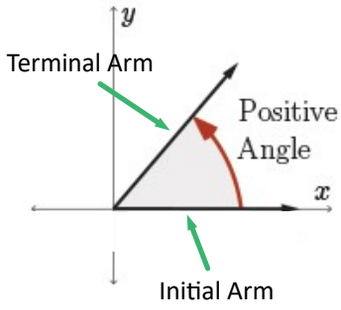
III quadrant

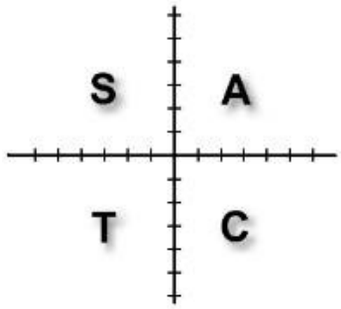
$\theta_r = \theta - 180$

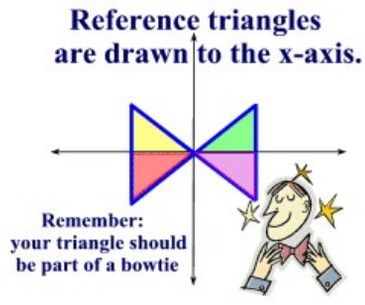


IV quadrant

$\theta_r = 360 - \theta$

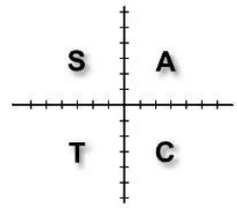






Lesson 4.1B: Angles between 0^0 and 360^0 (Day 2)

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



a) $\sin A = -0.4752$

Sine is negative in which quadrants?

$\theta_r = \sin^{-1}(0.4752)$

$\doteq 28^\circ$

Q_3: $\theta = 180 + 28 = 208^\circ$

Q_4: $\theta = 360 - 28 = 332^\circ$

$\therefore A = 208^\circ, 332^\circ$

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

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

$\doteq 71^\circ$

Q_1: $\theta = 71^\circ$

Q_4: $\theta = 360 - 71 = 289^\circ$

$\therefore A = 71^\circ, 289^\circ$

c) $\tan\theta = -2.14$

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

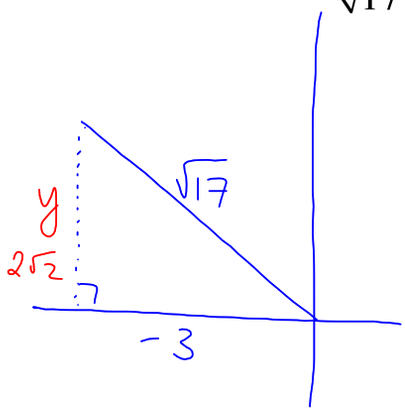
$\doteq 65^\circ$

Q_2: $\theta = 180 - 65 = 115^\circ$

Q_4: $\theta = 360 - 65 = 295^\circ$

$\therefore \theta = 115^\circ, 295^\circ$

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



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

$y^2 = 17 - 9$

$y^2 = 8$

$y = \sqrt{8}$

$= 2\sqrt{2}$

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

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

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

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

Homework Handout