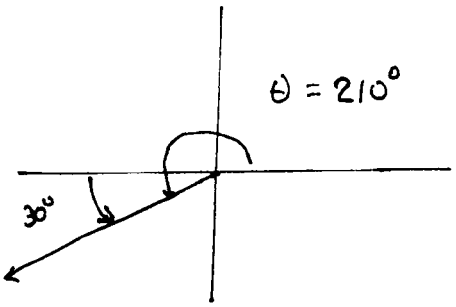
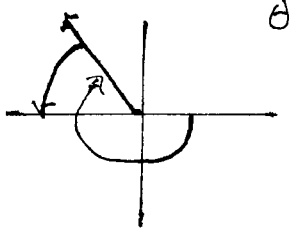


$\theta = 210°$ what is θ' = reference angle?

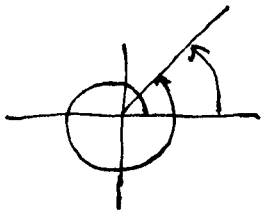
$\theta' = 30°$ $\theta' = 210° - 180° = 30°$



$\theta = -230°$ what is θ'?

Step 1: $\theta_1 = -230° + 360° = 130°$

Step 2: $\theta' = 180° - 130° = 50°$



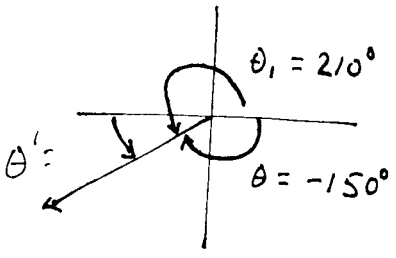
$\theta = 405°$ what is θ'?

$\theta' = 45°$ so $\theta' = 405° - 360° = 45°$

ex: Find $\sin(-150°)$ Let $\theta = -150°$

(Step 1) Find θ_1 so that it is coterminal with $-150°$ but $0° < \theta_1 < 360°$.

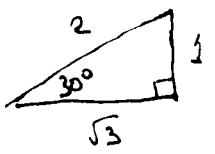
Take $\theta_1 = -150° + 360° = 210°$



(Step 2) Find $\theta' = 210° - 180° = 30°$

(Step 3) $\sin 30° = \sin \theta' = \frac{1}{2}$

(Step 4) $\sin \theta = \sin(-150°) = \pm \sin 30°$ ↑ choose '−' because $\sin\theta < 0$ in Quadrant III

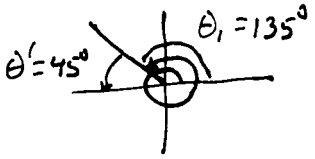


$= -\sin 30° = -\frac{1}{2}$

2.2

24) Find all six trig function values of $495° = \theta$

$\theta_1 = 495° - 360° = 135°$



$\theta' = 180° - 135° = 45°$

$\sin 495° = +\sin 45° = \frac{\sqrt{2}}{2}$ $\quad \csc 495° = \frac{2}{\sqrt{2}} = \sqrt{2}$

$\cos 495° = -\cos 45° = -\frac{\sqrt{2}}{2}$ $\quad \sec 495° = -\sqrt{2}$

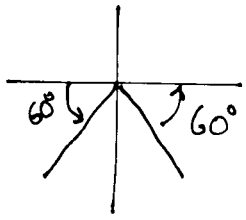
$\tan 495° = -\tan 45° = -1$ $\quad \cot 495° = -1$

ex: Find all values of θ, if θ is in the interval $[0°, 360°)$ and $\sin\theta = -\frac{\sqrt{3}}{2}$

Answer: (1) What quadrant is θ in? III or IV.

(2) What is θ'? For what $0 < \theta' < 90°$ do we have $\sin\theta' = \frac{\sqrt{3}}{2}$? $\theta' = 60°$

(3) What two angles could θ equal?



$\theta = 180° + 60° = 240°$

OR

$\theta = 360° - 60° = 300°$.

2.3 Using a calculator for trig functions

ex: $\sin 37^\circ = 0.6018$

$\tan 122^\circ = -1.6003$

$= -\tan 58^\circ$

If $\theta = 122^\circ$ then $\theta' = 180^\circ - 122^\circ = 58^\circ$

$\csc(-25^\circ) = \frac{1}{\sin(-25^\circ)} = -2.3662$

$= -\csc 25^\circ = \frac{1}{-\sin 25^\circ} = -2.3662$

Notation:

ex: $\sin^{-1}(0.5) = 30^\circ$

"arcsine of 0.5" = the angle whose sine is 0.5

OR $\arcsin(0.5) = 30^\circ$.

ex: Find an angle θ where $0^\circ \le \theta < 90^\circ$

and $\cos\theta = 0.921\,185\,41$

$\theta = \cos^{-1}(0.921\,185\,41)$

$= 22.9000^\circ \approx 22.9^\circ$