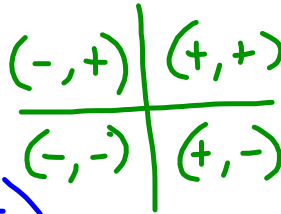$(X, Y) \Rightarrow (\cos\theta, \sin\theta)$

Evaluating using the Unit Circle: Sine and Cosine Notes

Evaluate the following trigonometric function:

$\sin 150^0 = \frac{1}{2}$

y

Ref angle: 30

Quadrant? Q2

Coordinates? $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$\cos 225^0 = -\frac{\sqrt{2}}{2}$

X

Ref angle: 45

Quadrant? 3

Coordinates? $\left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

y $\sin 660^0 = -\frac{\sqrt{3}}{2}$

Coterminal angle 300°   Ref angle: 60

Quadrant? 4

Coordinates? $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

X $\cos 450^0 = 0$

Coterm. & 90°   Ref angle: ∅

Quadrant? Quadrantal

Coordinates? $(0, 1)$

$\sin 240^0 = -\frac{\sqrt{3}}{2}$

Ref angle: 60°

Quadrant? 3

Coordinates? $\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

y $\sin -30^0 = -\frac{1}{2}$

Coterm. 330   Ref angle: 30°

Quadrant? 4

Coordinates?

$\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

$30's = \left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$45's = \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

$60's = \left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

$0/360 = (1, 0)$

$90° = (0, 1)$

$180° = (-1, 0)$

$270° = (0, -1)$

(−, +) | (+, +)
(−, −) | (+, −)

$\frac{-\sqrt{3}}{2} \approx -.866$

Evaluating using the Unit Circle: Sine and Cosine Notes

$\cos \pi = -1$ ✗   quadrantal $(-1, 0)$

$\sin \frac{3\pi}{2} = -1$ ✗   quad. $(0, -1)$

$\sin \frac{3\pi}{4} = \frac{\sqrt{2}}{2}$ ref angle $\frac{\pi}{4}$ Q2 $\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

$\cos \frac{5\pi}{6} = -\frac{\sqrt{3}}{2}$ ✗   ref angle $\frac{\pi}{6}$ Q2 $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$\cos \frac{4\pi}{3} = -\frac{1}{2}$ ✗   ref angle $\frac{\pi}{3}$ Q3 $\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

$\sin\left(-\frac{5\pi}{4}\right) = \frac{\sqrt{2}}{2}$ ref $\frac{\pi}{4}$ Q2 $\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

Find a positive angle θ, in degrees, that satisfies the given equation:

✱θ ⟹ inverse

Sine	ALL
$(-, +)$	$(+, +)$
TAN $(-, -)$	cosine $(+, -)$

(x, y)
$(\cos θ, \sin θ)$

$\sin θ = \frac{1}{2}$ $\boxed{30° \, \& \, 150°}$ $\cos θ = 1$ ✗
$30°$ Q1 and Q2 $\boxed{0° \text{ and } 360°}$

$\cos θ = -\frac{1}{2}$ ✗ $\cos θ = -\frac{\sqrt{2}}{2}$ ✗
60's   Q2   Q3   45   Q2   Q3
$\boxed{120° \quad 240°}$ $\boxed{135° \quad 225°}$

$\sin θ = -\frac{\sqrt{3}}{2}$ y $\cos θ = -1$ ✗
60's
Q3   Q4 $\boxed{180°}$
$\boxed{240° \quad 300°}$

Evaluating using the Unit Circle – HOMEWORK
Evaluate the following trigonometric function:

Ref angle 30°
coord (,) Q3

$\sin 210^0 =$

$\cos 330^0 =$

$\sin(-60^0) =$

$\cos 420^0 =$

$\sin 225^0 =$

$\sin(-120^0) =$

$\cos 2\pi =$

$\cos \dfrac{7\pi}{3} =$

$\sin \dfrac{\pi}{2} =$

$$\sin \frac{7\pi}{4} =$$

$$\cos \frac{7\pi}{6} =$$

$$\cos \frac{2\pi}{3} =$$

$$\sin\left(-\frac{\pi}{4}\right) =$$

$$\sin \frac{5\pi}{6} =$$

Find a positive angle ϑ, in degrees, that satisfies the given equation:

$$\sin \theta = \frac{\sqrt{2}}{2} \qquad\qquad \cos \theta = \frac{1}{2}$$

$$\cos \theta = -\frac{\sqrt{3}}{2} \qquad\qquad \cos \theta = -\frac{\sqrt{2}}{2}$$

$$\sin \theta = 0 \qquad\qquad \cos \theta = 1$$