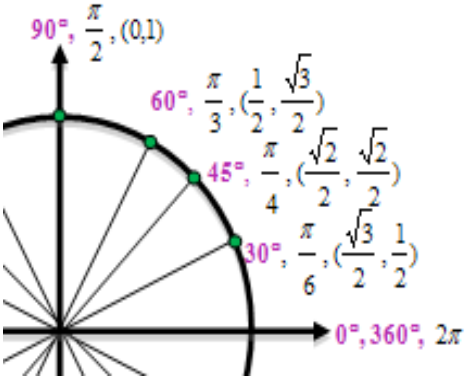
UNIT CIRCLE



You can determine the sine or the cosine of any standard angle on the unit circle. The x-coordinate of the circle is the cosine and the y-coordinate is the sine of the angle**.** Recall tangent is defined as sin/cos or the slope of the line.

Examples:

$\sin\frac{\pi}{2}=1$ $\cos\frac{\pi}{2}=0$ $\tan\frac{\pi}{2}=und$

***You must have these memorized OR know how to calculate their values without the use of a calculator.**

36. *a.*) $\sin\pi$ *b.*) $\cos\frac{3\pi}{2}$ *c.*) $\sin\left(-\frac{\pi}{2}\right)$ *d.*) $\sin\left(\frac{5\pi}{4}\right)$

e.) $\cos\frac{\pi}{4}$ *f.*) $\cos(-\pi)$ g) $\cos\frac{\pi}{3}$ h) $\sin\frac{5\pi}{6}$

i) $\cos\frac{2\pi}{3}$ j) $\tan\frac{\pi}{4}$ k) $\tan\pi$ l) $\tan\frac{\pi}{3}$

m) $\cos\frac{4\pi}{3}$ n) $\sin\frac{11\pi}{6}$ o) $\tan\frac{7\pi}{4}$ p) $\sin\left(-\frac{\pi}{6}\right)$

TRIGONOMETRIC EQUATIONS

Solve each of the equations for $0 \le x < 2\pi$ **.**

37. $\sin x = -\frac{1}{2}$

38. $2\cos x = \sqrt{3}$

39. $4\sin^2 x = 3$

**Recall $\sin^2 x = (\sin x)^2$

**Recall if $x^2 = 25$ then $x = \pm 5$

40. $2\cos^2 x - 1 - \cos x = 0$ *Factor

TRANSFORMATION OF FUNCTIONS

$h(x) = f(x) + c$	Vertical shift c units up	$h(x) = f(x - c)$	Horizontal shift c units right
$h(x) = f(x) - c$	Vertical shift c units down	$h(x) = f(x + c)$	Horizontal shift c units left
$h(x) = -f(x)$	Reflection over the x-axis		

41. Given $f(x) = x^2$ and $g(x) = (x-3)^2 + 1$. How the does the graph of g(x) differ from f(x)?

42. Write an equation for the function that has the shape of $f(x) = x^3$ but moved six units to the left and reflected over the x-axis.

43. If the ordered pair (2, 4) is on the graph of $f(x)$, find one ordered pair that will be on the following functions:

a) $f(x) - 3$ b) $f(x - 3)$ c) $2f(x)$ d) $f(x - 2) + 1$ e) $-f(x)$