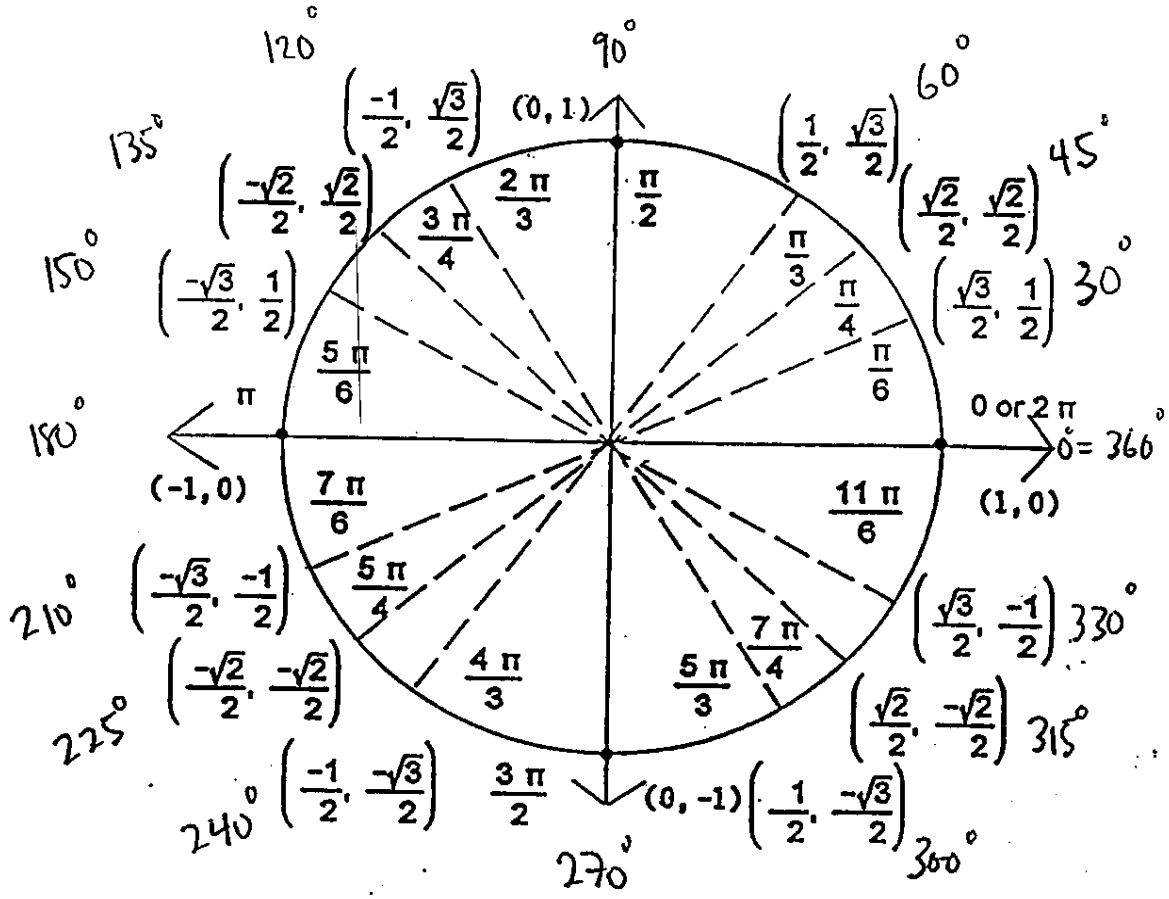
MAC 1114
THE UNIT CIRCLE



Conversion: $\dfrac{\theta \text{ radians}}{\pi} = \dfrac{\theta°}{180°}$

Definition: θ radians = s/r $\quad$ s = intercepted arc length $\quad$ r = radius

Area of sector: $A = \frac{1}{2} r^2 \theta$ $\quad$ (θ is in radians)

Arc length: $s = r\theta$ $\quad$ (θ in radians)

On the unit circle → $r = 1$ → $\cos\theta = x$, $\sin\theta = y$ $\quad$ $s = \theta$

Angular velocity: $w = \dfrac{\theta}{t}$ measures how fast the angle changes with respect to time

Linear velocity: $v = \dfrac{s}{t}$

$v = \dfrac{r\theta}{t}$ or $v = rw$ $\quad$ measures how fast a point on the circle moves with respect to time