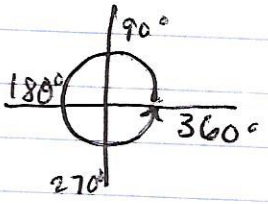
4.1 Radian and Degree Measure

Angle $1^\circ = \frac{1}{360}$ of a circle



DMS Degree °/Minutes '/seconds "

Ex. 1 Convert 37.425° to DMS

$.425^\circ\left(\frac{60'}{1^\circ}\right) = 25.5'$

$.5'\left(\frac{60''}{1'}\right) = 30''$

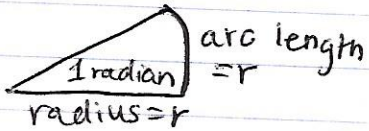
$37^\circ 25' 30''$

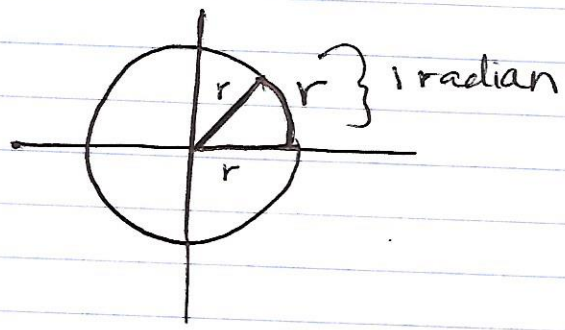
Ex. 2 Conver $42^\circ 24' 36''$ to degrees

$42^\circ + (24' \cdot 1^\circ/60') + \left(36'' \cdot \frac{1'}{60''} \cdot \frac{1^\circ}{60'}\right)$

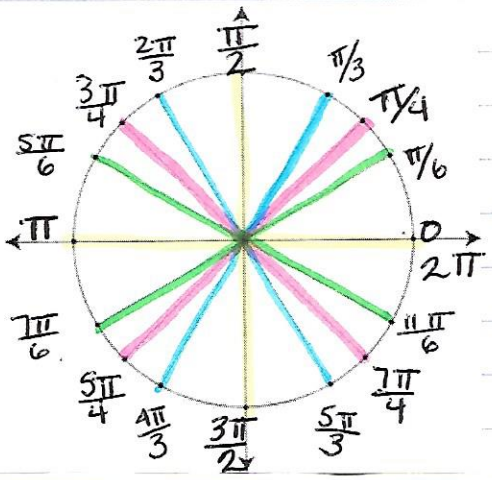
42.41°

Radians (rad) measure of an angle in standard position whose length of ther arc equals the length of the radius.





Unit Circle



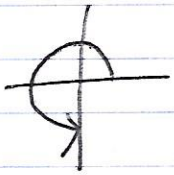
Unit circle radius = 1

$C = 2\cdot\pi\cdot r$
$C = 2\pi(1)$
$C = 2\pi$

$2\pi = 360°$
$\pi = 180°$

Ex. 1 Find the degree and radian measure.

3/4 of a circle



degrees: $270°$

$\frac{3}{4} \cdot 360 = 270°$

radians

$\frac{3}{2\cancel{4}} \cdot \cancel{2\pi} = \frac{3\pi}{2}$

Convertions

Radians → Degrees

multiply by $\frac{180}{\pi}$

Degress → Radians

multiply by $\frac{\pi}{180}$

Ex 2 convert to Degrees.

(1) $\frac{\cancel{\pi}}{5}\left(\frac{180}{\cancel{\pi}}\right) = 36°$

Convert to rad.

(2) $75° \cdot \frac{\pi}{180} = \frac{11\pi}{9}$