8/31/2012 - Sec 1.2 — Math 1060

1 deg = 60 min 1 min = 60 sec

$37^\circ\ 15'\ 33''$

$33'' \cdot \frac{1'}{60''}$

$\frac{33}{60}'$ $39.3597^\circ N$

$37^\circ 15' + \frac{33}{60}'$

$37^\circ 15.55'$

$15.55' \cdot \frac{1^\circ}{60'} = \frac{15.55}{60}$

$37.259\overline{16}^\circ$

42.31° $.31^\circ \cdot \frac{60'}{1^\circ} = 18.6'$

$42^\circ 18' 36''$ $.6' \cdot \frac{60''}{1'} = 36$

$44^\circ 19' 32''$

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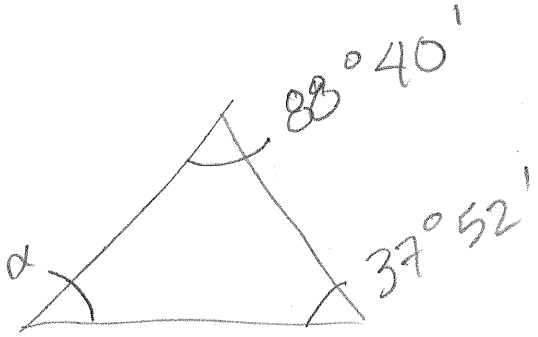


$88^\circ 40' + 37^\circ 52' + \alpha = 180^\circ$

$125^\circ 92'$

$-60'$

$126^\circ 32' + \alpha = 179^\circ 60'$

$-126^\circ 32'$

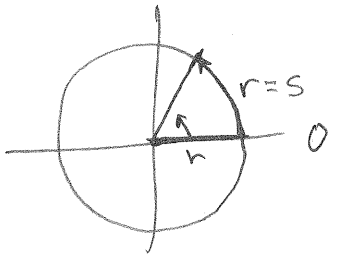
$-126^\circ 32'$

$53^\circ 28'$

$\alpha =$

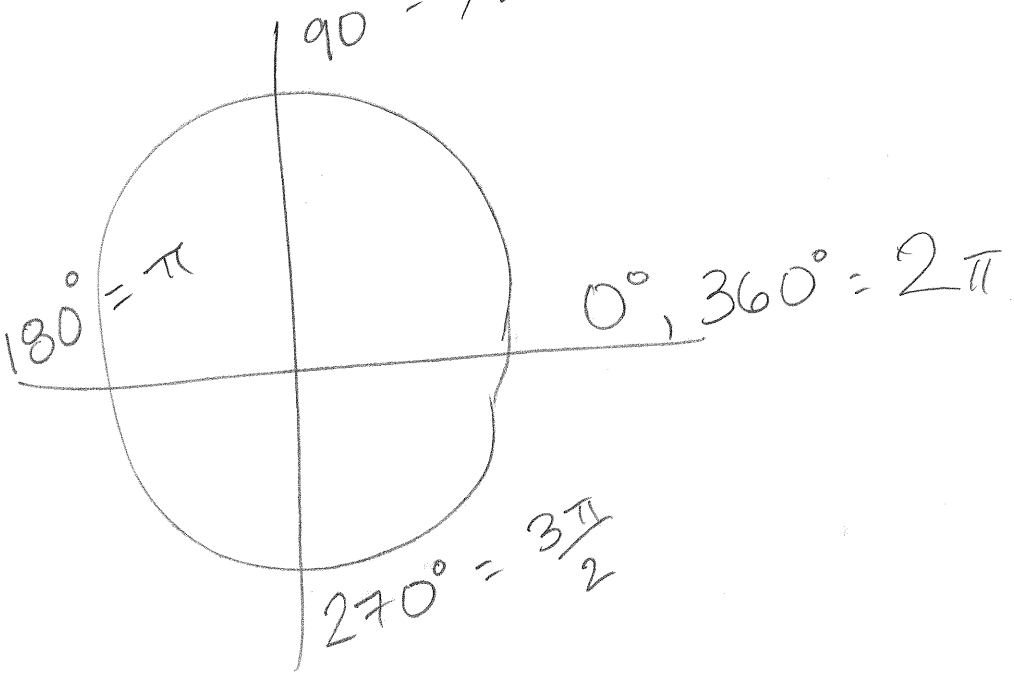
Sec 1.2 Radian Measure, Arc Length & Area

Defn: One <u>Radian</u> is the measure of a central angle α that intersects an arc s equal in length to the Radius of the circle



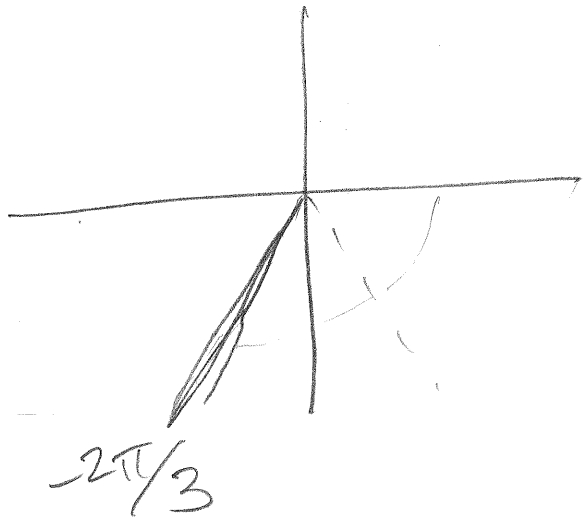
$360^\circ = 2\pi$ rad

$180^\circ = \pi$ τ



$$-120^\circ \cdot \frac{\pi \text{ rad}}{180^\circ} = \frac{-120\pi}{180}$$

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



Coterminal angles

in degrees differed by multiple of 360°

in Radians differ by multiples of 2π

$$\frac{\pi}{3} + 2\pi = \left(\frac{1}{3} + 2\right)\pi$$

2 positive

$$\frac{7\pi}{3}, \frac{13\pi}{3}$$

2 negative

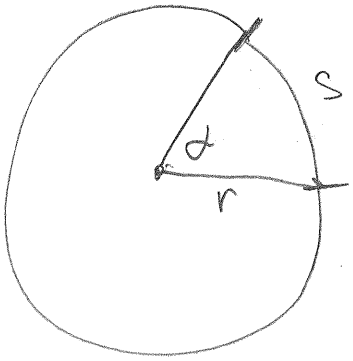
$$-\frac{5\pi}{3}, \frac{-11\pi}{3}$$

$$\frac{\pi}{3} - \frac{2\pi \cdot 3}{1 \cdot 3}$$

$$\frac{\pi}{3} - \frac{6\pi}{3} - \frac{6\pi}{3}$$

Radian

central angle ↙ $\alpha = \frac{s}{r}$ ↙ arc length



$$s = \alpha r$$

α must be in Radians

Example 4b

a wagon wheel has diameter 28 in

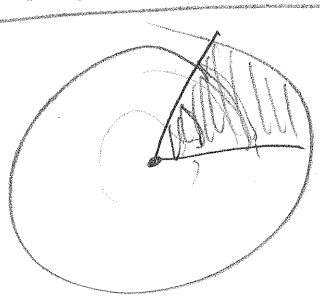
angle in between spokes is 30°

$$30^\circ \cdot \frac{\pi}{180^\circ} = \frac{30\pi}{180} = \frac{\pi}{6}$$

$$s = \frac{\pi}{6} \cdot 14$$

$$= 7.3304 \text{ in}$$

Area of Sector



$$\frac{A}{\pi r^2} = \frac{\alpha}{2\pi}$$

$$A = \frac{\alpha r^2}{2}$$