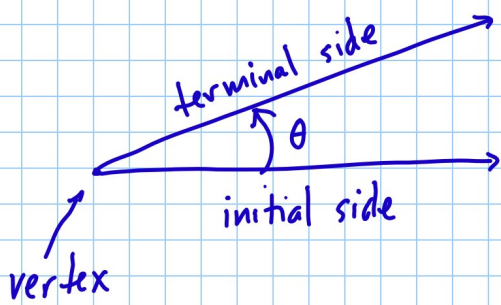
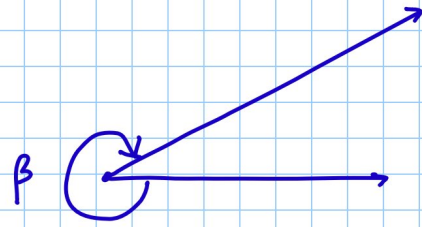


Section 5.1 Angles and Their Measures

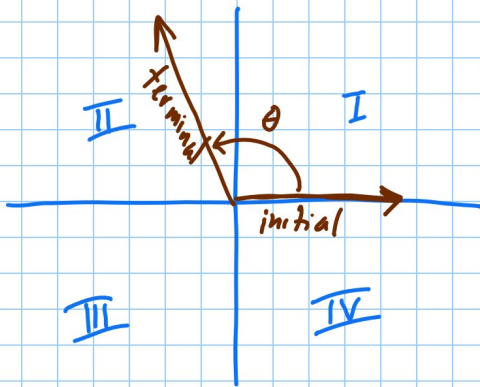


counterclockwise
positive angle measure



clockwise
negative angle measure

Standard Position - initial side is the positive x-axis



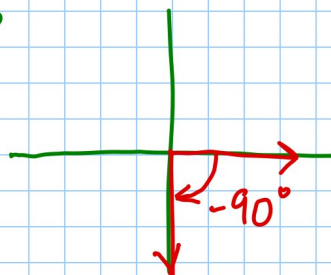
We say θ lies in Quadrant II because its terminal side is in QII.

When the terminal side lies on an axis we say the angle is a quadrantal angle

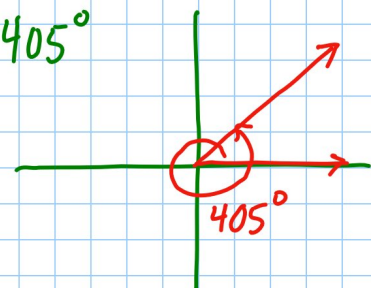
One way to measure angles is in degrees. There 360° in one revolution. A straight angle is 180° . A right angle is 90° .

Draw angle in standard position.

ex: -90°



ex: 405°



To get angle measures more precisely we use minutes and seconds.

There are 60 minutes in 1 degree

There are 60 seconds in 1 minutes

There are 3600 seconds in 1 degree.

Convert to decimal:

$$50^{\circ} 6' 21'' = 50.106^{\circ}$$

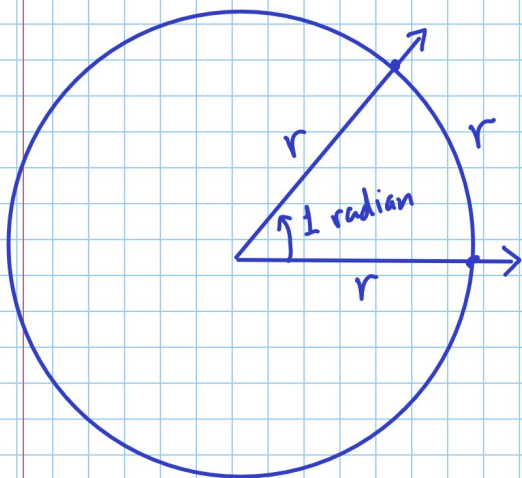
50 2nd angle $^{\circ}$ 6 2nd angle $'$ 21 $''$ enter
↑
above +

Convert to degrees, minutes, seconds

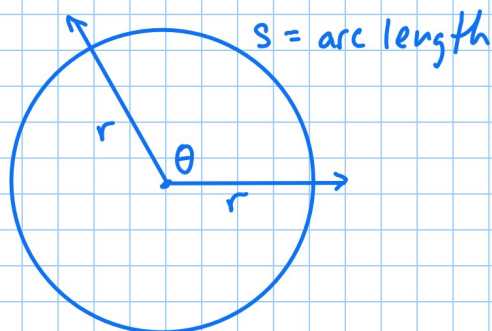
$$21.256^{\circ} = 21^{\circ} 15' 21.6''$$

21.256 2nd angle \blacktriangleright DMS enter

A central angle is one whose vertex is the center of a circle. We can measure angles in radians.



If the radius of the circle and the arc length are the same, the angle measures 1 radian.



If θ is in radians, then

$$s = r\theta$$

What is angle in radians that is one revolution?

one revolution
has arc length = circumference

$$r\theta = 2\pi r$$

$$\theta = 2\pi \text{ radians}$$

$$360^\circ = 2\pi \text{ radians}$$

$$1^\circ = \frac{2\pi}{360} \text{ radians}$$

$$1^\circ = \frac{\pi}{180} \text{ radians}$$

To convert from degrees to radians, multiply by $\frac{\pi}{180}$

To convert from radians to degrees, multiply by $\frac{180}{\pi}$

ex: Convert 315° to radians

$$315^\circ \cdot \frac{\pi}{180} = \frac{7}{4}\pi = \frac{7\pi}{4}$$

$315 * 1/180$ ► FRAC

MATH menu

ex: Convert $\frac{5\pi}{6}$ to degrees

$$\frac{5\pi}{6} \cdot \frac{180}{\pi} = 150^\circ$$

$5/6 * 180$ enter

p379

5-40 mults of 5,
69, 70, 75, 76