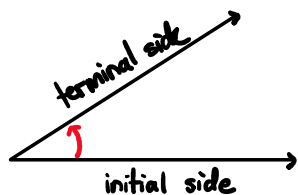
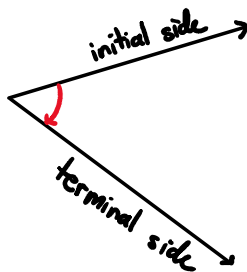


Angle Measure

Recall angle measure is "how much" we have to rotate initial side to get terminal side

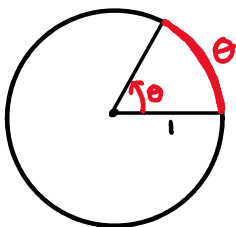


ccw is positive angle



cw is negative angle

Radians Circle of radius 1.

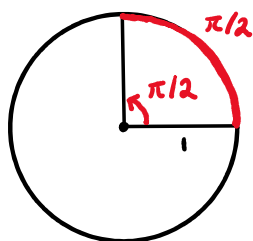
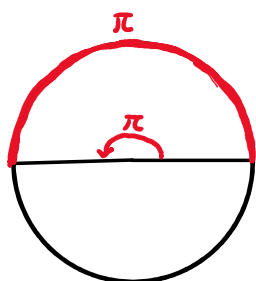


Def The measure of angle θ in radians is the length of arc that subtends θ in the picture.

Abbr "rad"

Fact Circumference of circle of radius r is $2\pi r$
 $\Rightarrow$ circle above has circumference 2π

Common Angles



Degrees $\leftrightarrow$ Radians Conversion

• Deg $\rightarrow$ rad: multiply by $\frac{\pi}{180^\circ}$

• Rad $\rightarrow$ deg: multiply by $\frac{180^\circ}{\pi}$

Ex

(a) Express 60° in radians π

Ex

(a) Express 60° in radians $\frac{\pi}{3}$

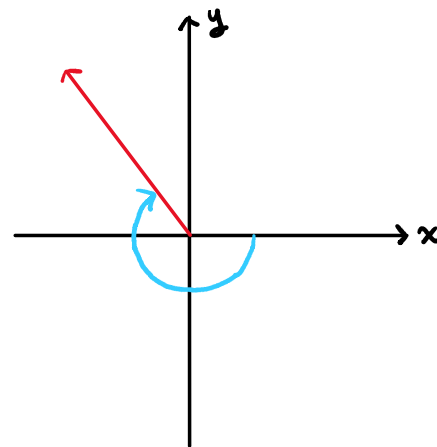
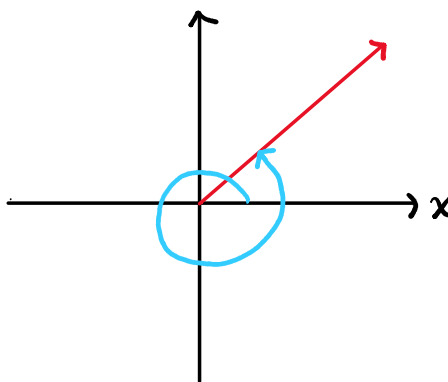
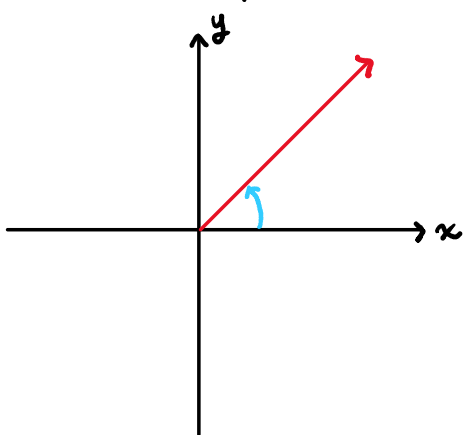
(b) Express $\frac{\pi}{6}$ rad in degrees 30°

Your try

(a) Convert 20° to radians $\pi/9$

(b) Convert $\frac{7\pi}{6}$ to degrees 210°

Angle is in standard position if its vertex is at origin and initial side is on positive axis



Two angles are coterminal if their terminal side coincide

Ex

(a) Find angles that are coterminal to 30° $750^\circ, -690^\circ, \text{etc.}$
 $390^\circ, -330^\circ, \text{etc.}$

(b) Find angles that are coterminal to $\pi/3$ $\frac{7\pi}{3}, \frac{13\pi}{3}, -\frac{5\pi}{3}, -\frac{11\pi}{3}$

Your turn

(a) Find two positive angles and two negative angles coterminal to 50°

$$410^\circ, 770^\circ$$

$$-310^\circ, -670^\circ$$

(b) Same question but $\frac{3\pi}{4}$

$$\frac{11\pi}{4}, \frac{19\pi}{4}, -\frac{5\pi}{4}, -\frac{13\pi}{4}$$