

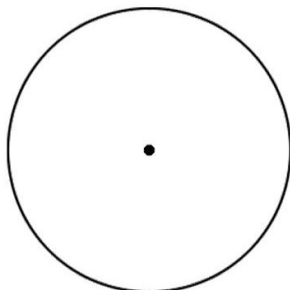
Pre-Calculus

Notes (3.1)---Angles & Their Measure

What is a radian?

- A radian is a _____ measure.
- A central angle of a circle has measure equal to 1 radian if it intercepts an arc with the same length as the radius.

How many times can you trace an arc length equal to the length of the radius as you move around the circumference of a circle?



Conversions:

Degree to Radian

Ex1) a) How many radians are in 90° ?

c) How many radians are in 130° ?

Radians to Degrees

b) How many degrees are in $\frac{\pi}{3}$ radians?

d) How many degrees are in $\frac{13\pi}{4}$ radians?

Some important terms to know

✂ In Trigonometry we look at an angle in terms of a rotating ray. The beginning position of the ray is called the _____ side of the angle.

✂ The ray is rotated about its end point called the _____ and the final position of the ray is called the _____ side of the angle.

✂ The _____ of an angle is a number that describes the amount of rotation from the initial side to the terminal side of the angle.

*Positive angles are generated by _____ rotations

*Negative angles are generated by _____ rotations

****NOTE:** Typically angles are drawn in STANDARD POSITION with vertex at the origin & initial side on the positive x-axis.

✧ Because it is possible for two angles to have the same initial side and terminal side but different angle measures we refer to these angles as _____ angles.

Ex2) Find & draw 2 positive and 2 negative angles that are co-terminal with the given angle.

a) 30°

b) -150°

c) $\frac{2\pi}{3}$

d) $\frac{5\pi}{4}$

Ex 3) State the quadrant of the terminal side and give the conterminal angle that is in the interval from $[0,360^\circ)$

a) 370°

b) -720°

c) 1080°

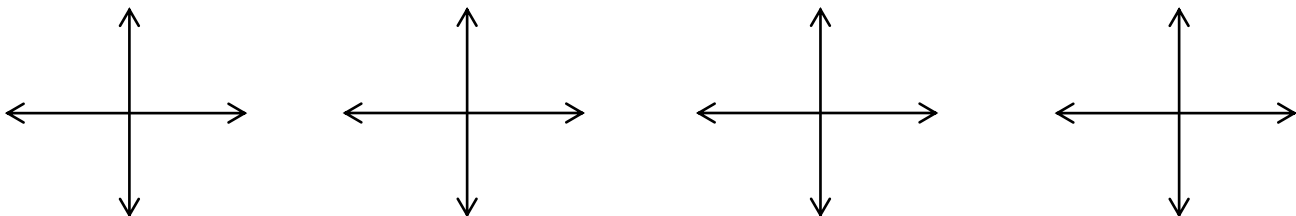
Ex 4) State the quadrant of the terminal side and give the conterminal angle that is in the interval from $(0,2\pi]$

a) $\frac{10\pi}{3}$

b) 12π

c) -11π

What is a reference angle?



✧ Angles whose terminal sides lie along one of the coordinate axes are called _____ angles.

Reference Angles

Ex 5) State the quadrant the terminal side of each angle is located and find the reference angle.

a) 30°

b) -150°

c) 910°

d) -50°

e) 180°

f) $\frac{2\pi}{3}$

g) $\frac{7\pi}{6}$

h) $\frac{19\pi}{4}$

i) $\frac{-15\pi}{7}$

j) -11π