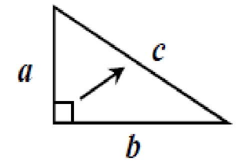
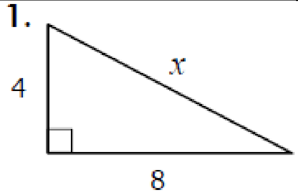
Main Ideas	Notes
PYTHAGOREAN THEOREM	Used to find a side length on a right triangle.

Formula:

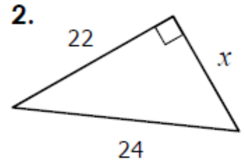


Directions: Find the missing Side. Give your answer in simplest radical form.

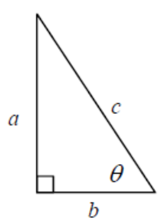
1.



2.



TRIGONOMETRIC FUNCTIONS



- A ____________________ **function** is a function whose rule is defined by a trigonometric ratio.
- A **trigonometric** _________ compares the lengths of two sides of the triangle.
- The Greek letter _______ is used to represent the measure of an acute angle in a right triangle.

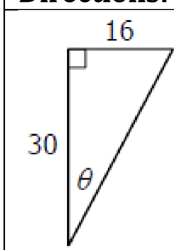
SINE	COSINE	TANGENT

RECIPROCAL FUNCTIONS

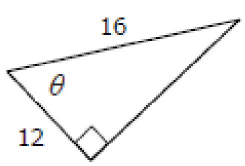
COSECANT	SECANT	COTANGENT

EXAMPLES

Directions: Find all six trig ratios for Θ shown in the triangle below.

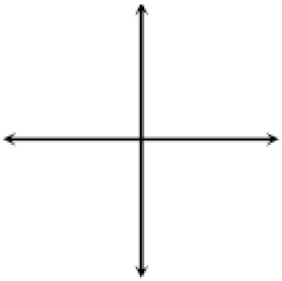


sin Θ =	csc Θ =
cos Θ =	sec Θ =
tan Θ =	cot Θ =



sin Θ =	csc Θ =
cos Θ =	sec Θ =
tan Θ =	cot Θ =

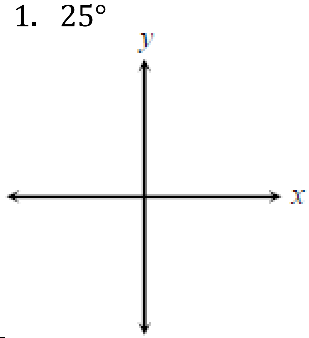
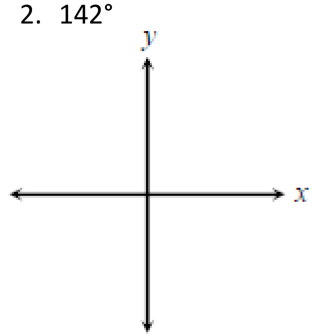
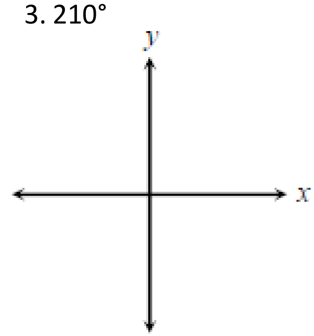
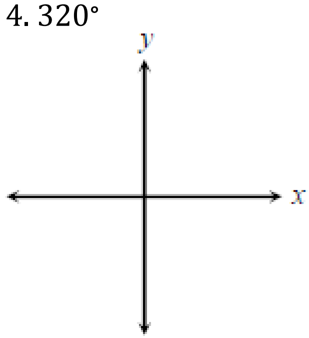
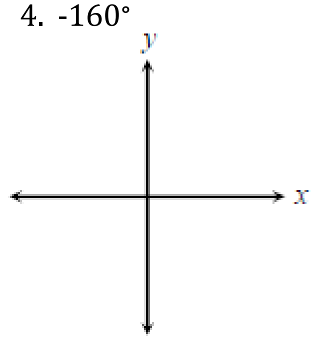
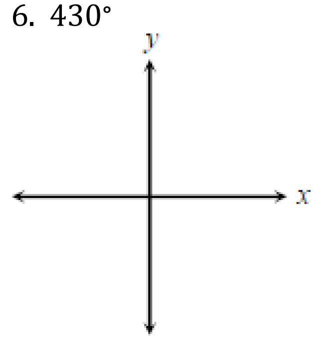
Angles in Standard Position



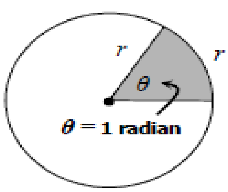
- An angle on the coordinate plane is in ___________________ ______________ when the vertex is on the origin and one ray lies on the positive *x*-axis.
- The ray on the *x*-axis is called the _________________ __________.
- The other ray is called the _________________ __________.
- Counterclockwise rotations result in _________________ angle measures.
- Clockwise rotations result in _________________ angle measures.
- One full revolution = ____________.

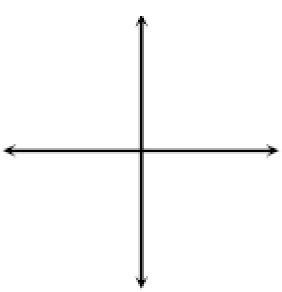
Drawing Angles

Directions: Sketch an angle with the given measure in standard position.

1. 25° 	2. 142° 	3. 210° 
4. 320° 	4. -160° 	6. 430° 

Radians Vs. Degrees





A __________ is the measurement of an angle in standard position whose arc length, s, is equal to its radius, r. There are approximately _________ radians in every circle.

Recall that the circumference of a circle is $2\pi r$, therefore:

$$S = r\theta$$

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

$$2\pi = \theta$$

We all know that every circle has 360 degrees so $360° = 2\pi$.

Converting Degrees → Radians	Converting Radians → Degrees

Degrees → Radians

Directions: Convert each measure to radians.

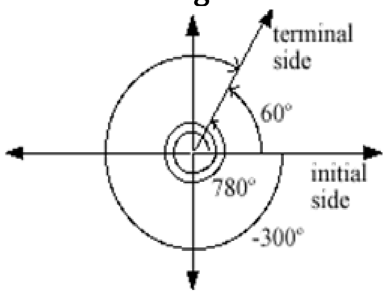
1. 30°	2. 150°	3. -220°

Radians → Degrees

Directions: Convert each measure to degrees.

4. $\frac{4\pi}{3}$	5. $\frac{7\pi}{4}$	6. $\frac{-5\pi}{36}$

Coterminal Angles



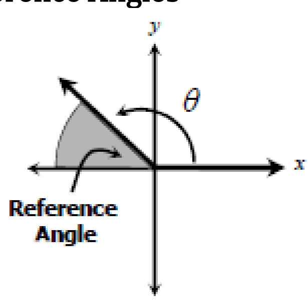
Angles in standard position with the same terminal side are ____________________ **angles.**

Positive Angle:	**Negative Angle:**
Degrees:	Degrees:
Radians:	Radians:

Directions: Give one negative and one positive angle that are coterminal to the given angles.

1. 110° P: N:	2. -30° P: N:
3. $-250°$ P: N:	4. 560° P: N:
5. $\frac{5\pi}{3}$ P: N:	6. $-\frac{\pi}{12}$ P: N:

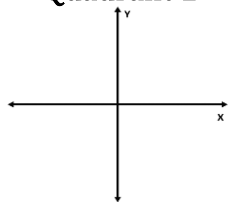
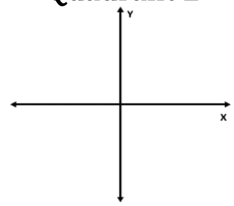
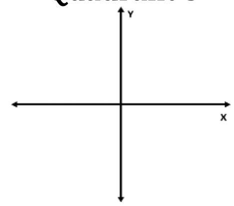
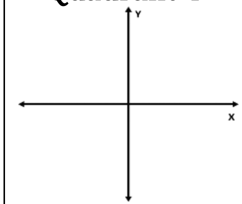
Reference Angles



For an angle θ in standard form, the ________________ **angle** is the positive acute angle form by the terminal side and the x-axis.

- All reference angles are positive, acute angles measuring between $0°$ *and* $90°$.
- Finding Reference Angles for Angles greater than 360° or less than 360°
  1. Find a positive angle less than 360° or 2π that is conterminal with the given angle.
  2. Draw θ in standard position.
  3. Use the drawing to find the reference angle for the given angle

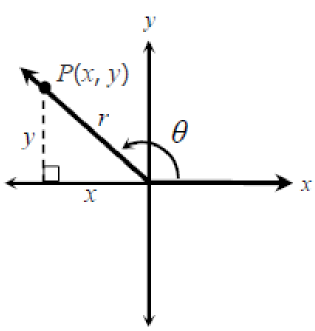
- When in radians, if the denominator is
  1. 3 the reference angle is _______.
  2. 4 the reference angle is ______.
  3. 6 the reference angle is ______.

	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4
				
	Degrees:	**Degrees:**	**Degrees:**	**Degrees:**
	Radians:	**Radians:**	**Radians:**	**Radians:**

Directions: Find the reference angle for each angle.

1. $\boldsymbol{\theta = 57°}$	2. $\boldsymbol{\theta = 145°}$	3. $\boldsymbol{\theta = 210°}$
4. $\boldsymbol{\theta = 320°}$	5. $\boldsymbol{\theta = -240°}$	6. $\boldsymbol{\theta = 580°}$
7. $\boldsymbol{\theta = \frac{5\pi}{3}}$	8. $\boldsymbol{\theta = \frac{7\pi}{4}}$	9. $\boldsymbol{\theta = -\frac{13\pi}{6}}$

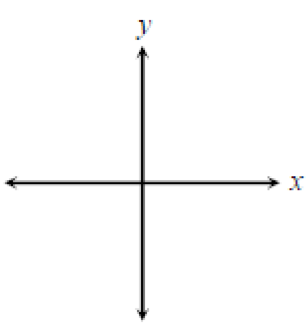
Trigonometric Functions



Let θ be an angle in standard form and $P(x, y)$ be a point on the terminal side of θ. The distance from P to the the origin, r, can be found using the formula:

r =

sin Θ =	cos Θ =	tan Θ =
csc Θ =	sec Θ =	cot Θ =



Directions: P(5, -2) is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ:

sin Θ =	cos Θ =	tan Θ =
csc Θ =	sec Θ =	cot Θ =

r =