Trigonometric Functions of Any Angle

Term	Definition	Picture
Reference Angle		
Reference Triangle		
Standard Position Initial Side Terminal Side		
Coterminal Angles		
Measure of an Angle		
Unit Circle		
Special Right Triangle 30 – 60 – 90		

Reference Angles:

The values of the trig functions of angles greater than 90 degrees can be determined from
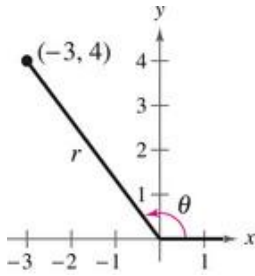
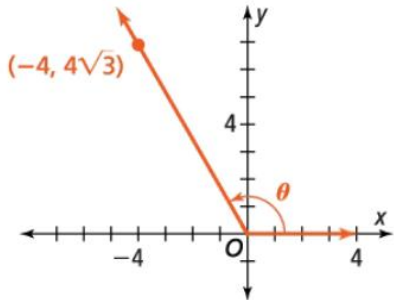their reference angles, which _____.

Signs of Trig Functions
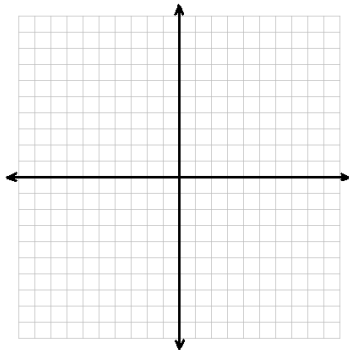
Trigonometric Functions of Any Angle

Evaluating Trig Functions

Example 1: Find the sine, cosine, and tangent of θ.

Example 2: Find the sine, cosine, and tangent of θ.

Practice Problem 1: Let (-2, 3) be a point on the terminal side of θ. Find the sine, cosine, and tangent of θ.

Example 3: What is the reference angle for an angle that is:

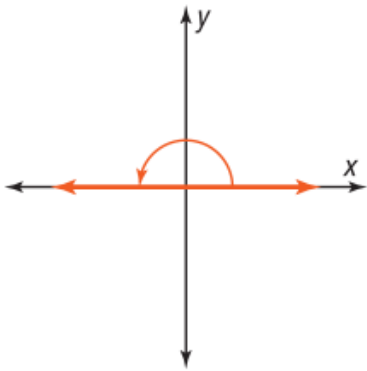   a) $120°$ b) $210°$ c) $-210°$ d) $-45°$
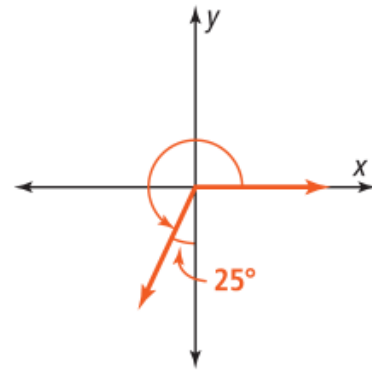
Coterminal Angles

Example 4:

1. Given the initial and terminal sides, find a positive angle measure, a negative angle measure, and an angle measure greater than 360° for each angle below.
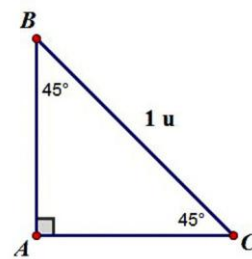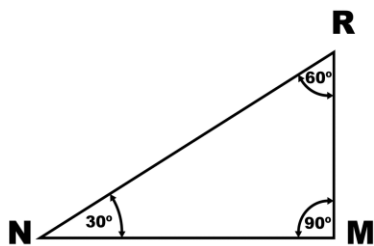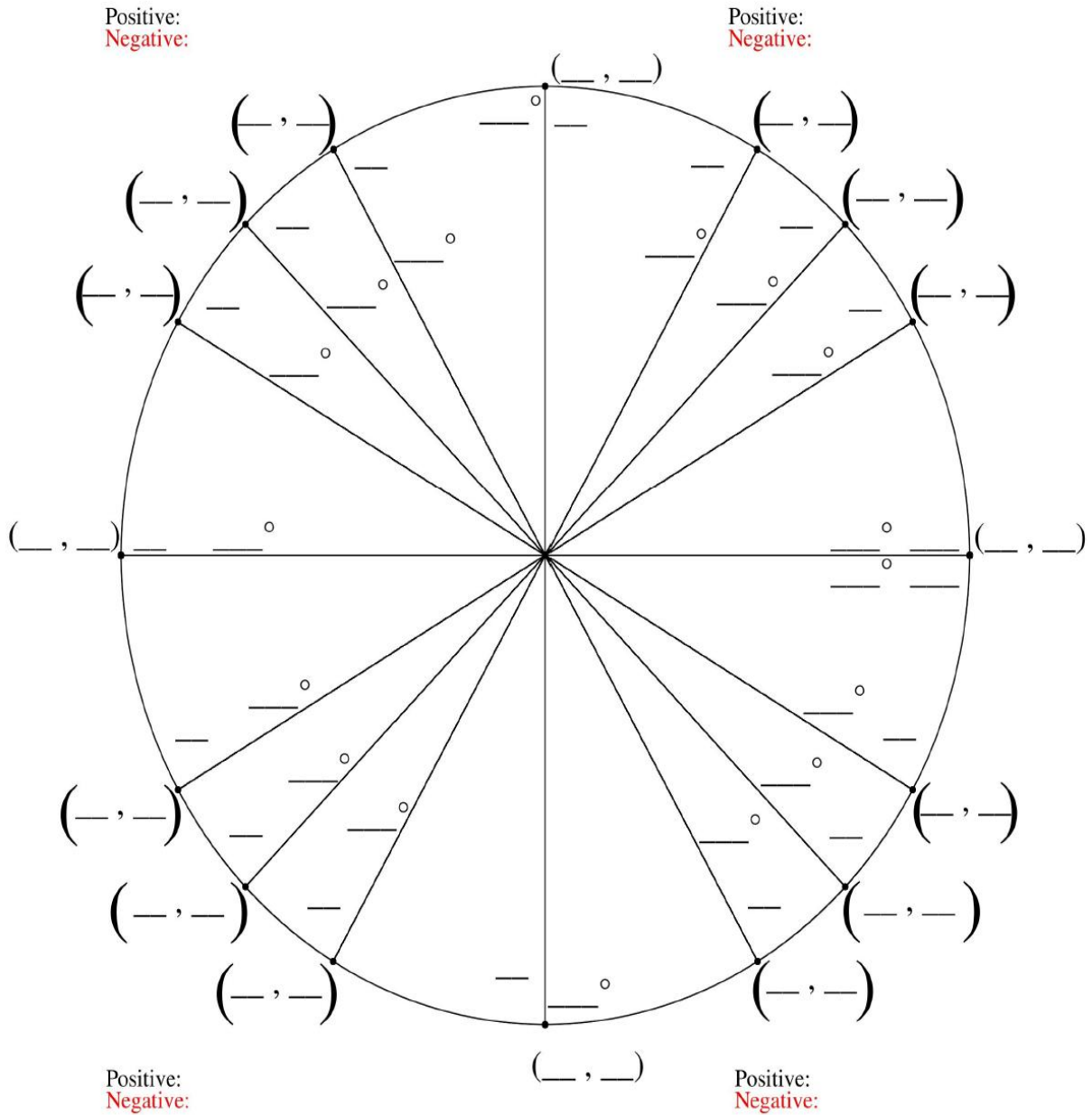
a.

b.

Special Right Triangles

Use the Pythagorean Theorem to find the lengths of the missing sides.

Trigonometric Functions of Any Angle

The Unit Circle

Positive:
Negative:

Positive:
Negative:

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

$(\_\_ , \_\_)$

Positive:
Negative:

Positive:
Negative:

Definitions of Trigonometric Functions		
sinθ =	cosθ =	tanθ =
cscθ =	secθ =	cotθ =

Trigonometric Functions of Any Angle

Classwork:

1. Find the following trig values:

   a) sin240°   b) cos90°   c) tan120°   d) cos60°   e) sin270°

   f) sin330°   g) tan45°   h) tan270°   i) cos540°   j) sin(-120)°

   k) cos720°   l) tan(-330)°   m) sec60°   n) csc360°   o) cot405°

2. Find the values of the six trig functions of θ.

   a) $\tan\theta = -\dfrac{15}{8}$, $\sin\theta < 0$

   b) $\sec\theta = -2$, $0 \le \theta \le \pi$

sin θ =	cos θ =	tan θ =
csc θ =	sec θ =	cot θ =

sin θ =	cos θ =	tan θ =
csc θ =	sec θ =	cot θ =