NOTES: SECONDARY 2 HONORS

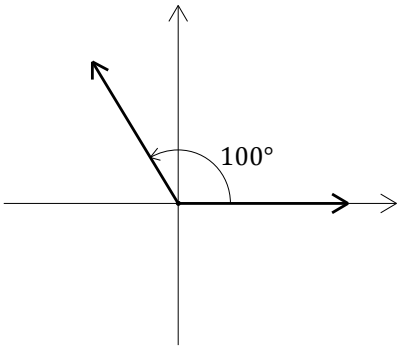
Unit 9: Trigonometric Functions of Obtuse Angles

Positive Angles and Negative Angles

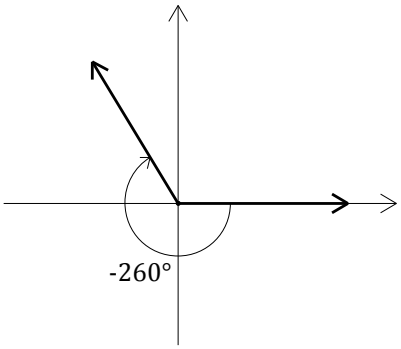
When drawing an angle on a coordinate plane, we always start at the $0°$. Angles that move _____ are positive and angles that move _____ are negative.

Coterminal Angles: Angles that have the same initial side and terminal side.

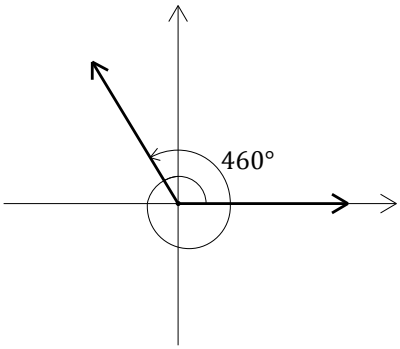
All three angles below are coterminal.



Positive coterminal angle



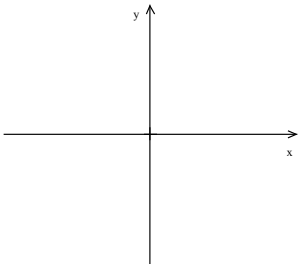
Negative coterminal angle



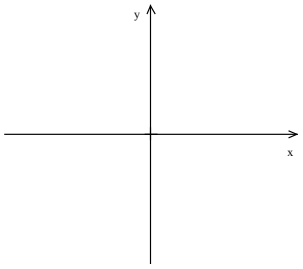
Positive coterminal angle

Example 1: Find and draw a positive and a negative angle that are coterminal with the given angle.

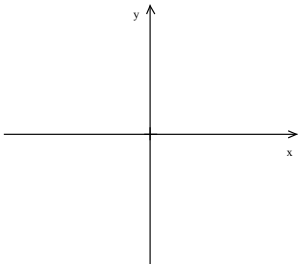
a. $30°$



b. $150°$



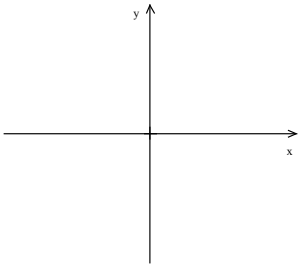
c. $-210°$



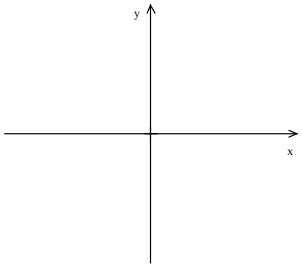
Reference Angles: The smallest angle that the terminal side of a given angle makes with the _____.

Example 2: Find the reference angle of the given angles.

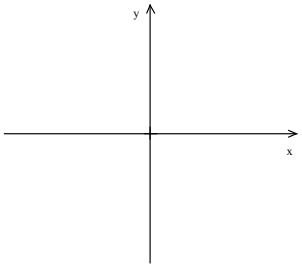
a. $210°$



b. $-300°$



c. $430°$



Why do we care about reference angles and coterminal angles? All coterminal angles have the same trig ratios. We can find the trig ratios using reference angles and ASTC.

STEPS TO FINDING A TRIG RATIO OF AN OBTUSE ANGLE

1. Draw the angle on a coordinate plane.
2. What quadrant is the angle in? Is the trig function in that quadrant positive or negative?
3. Find the reference angle. (REMEMBER: this is from the x-axis).
4. Evaluate the trig ratio of the reference angle applying your analysis of #2.

Example 3: Find the following without using a calculator.

a. $\cos(315°)$ b. $\sin(-210°)$ c. $\tan(300°)$

d. $\sin(210°)$ e. $\tan(120°)$ f. $\cos(135°)$

g. $\tan(315°)$ h. $\sin(-45°)$ j. $\cos(150°)$

k. $\sec(300°)$

l. $\tan(-330°)$

m. $\csc(390°)$

n. $\cos(495°)$

o. $\sin(-480°)$

p. $\cos(570°)$