Right triangle trigonometry involves angles with the following measures:

$0° < \theta < 90°$

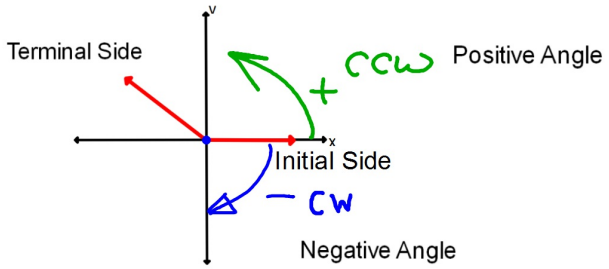
and also involves using: SOHCAHTOA

This means you were only able to find the Sin, Cos, and Tan of acute angles.

Angles is Standard Position:

Vertex is at the origin.

One of the rays (sides) is on the positive x-axis.

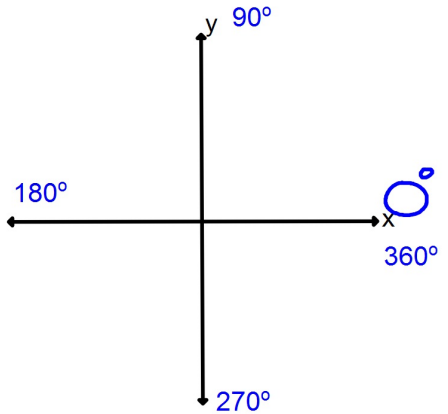


Angles in Standard Positive:

The initial side is on the Positive x-axis.

Positive angles are measured Counter Clock Wise (CCW) from the initial side.

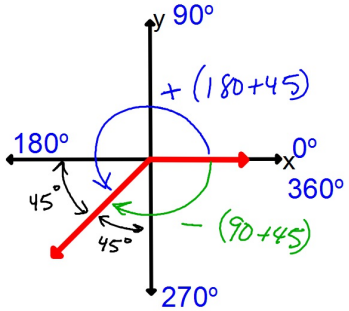
Negative angles are measure Clock Wise (CW) from the initial side.



Location of 0° (starting point) is at the positive x-axis

The terminal side is in the middle of the third quadrant.
Give two possible measures for this angle.

$\theta = +225^\circ$ $\theta = -135^\circ$



Can you give 2 more possible measures of this angle?

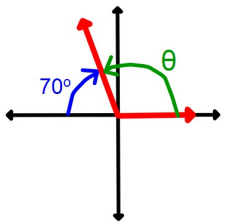
$\theta = 225 + 360 = 585^\circ$

$\theta = -135 - 360 = -495^\circ$

If you rotate 360° in either direction you end up back at the same terminal side.

Find the measure of each Green angle in standard position.

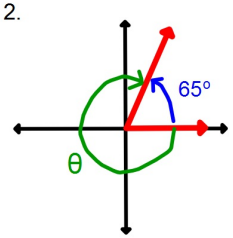
1.



$\theta = 180 - 70$

$\theta = 110^\circ$

2.

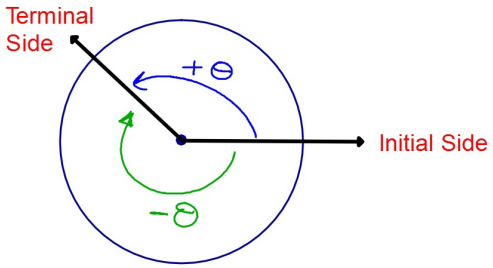


$\theta = \rightarrow 360 - 65$ but θ is measured in a neg. direction

$\theta = -295^\circ$

Coterminal Angles: Angles in Standard Position that have the same terminal side.

They start and stop in the same spot but aren't the same angle. How could this be?



Moving in different directions will give you angles with opposite signs but still have the same terminal side.

Also, rotating any number of full circles, in either direction, then continuing on to the terminal side will give you an angle with a different measure (different number of degrees) yet the same terminal side.

Every time you rotate 360° in either a CW or CCW direction you end up back at the same spot.

Angles in Standard Position are coterminal if they have a difference of 360°
or
they have a difference that is a multiple of 360°

Find a positive and a negative coterminal angle for each given angle.

1. $\theta=800^\circ$

Pos: 1520°, 1160°, 440°, ...

Neg: -280°, ...

2. $\theta= -430^\circ$

Pos: 290°, ...

Neg: $-70^\circ, -790^\circ, \ldots$

The above are some of the more common answers but in reality there is an infinite number of answers for each.

Is 3110° coterminal with 230°?

$$\frac{3110-230}{360} = 8$$

these angles are separated by 8 full turns.

Therefore, they ARE coterminal

If the difference between two angles isn't an integer value they can't be coterminal.

the answer would obviously be NO if what were true?

If 2 angles don't have the same last digit they CAN'T be coterminal

When finding coterminal angles you can add or subtract 360° or any multiple of 360° as many times as you either want to or need to.

It's common to have to add or subtract 360° more than once. In order to speed up the process you may learn some common multiples of 360° such as
720° $(360^\circ \times 2)$
and
1080° $(360^\circ \times 3)$.
Using these numbers instead of 360° just speeds up the process.

Find the measure of an angle between 0° and 360° that is coterminal to the given angle.

1. $\theta = 2215^\circ$

-1080°

1135°

-1080°

55°

2. $\theta = -1720^\circ$

$+1080^\circ$

-640°

$+720^\circ$

80°

In which quadrant or on which axis does the terminal angle of each angle lie?

1. $\theta = -1040^\circ$

$-1040^\circ + 1080^\circ = 40^\circ$

40° is in Quadrant I

2. $\theta = 975^\circ$

$975^\circ - 720^\circ = 255^\circ$

255° is in Quadrant III

In which quadrant or on which axis does the terminal angle of each angle lie?

3. $\theta = 2520^\circ$

$2520^\circ - 1080^\circ = 1440^\circ$

$1440^\circ - 1080^\circ = 360^\circ$

pos x-axis

4. $\theta = -3083^\circ$

$-3083^\circ + 1080^\circ = -2003^\circ$

$-2003^\circ + 1080^\circ = -923^\circ$

$-923^\circ + 1080^\circ = 157^\circ$

Quadrant II

5. $\theta = 1710^\circ$

$1710^\circ - 1080^\circ = 630^\circ$

$630^\circ - 360^\circ = 270^\circ$

Neg y-axis

Hwk #15 Sec 13-2

Page 722 Due Monday

Problems 2- 4, 12-14, 39, 40, 45- 48.