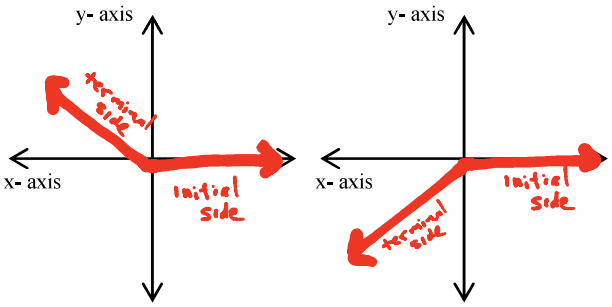
The Trigonometric Functions
8.1 – Angles & Degrees

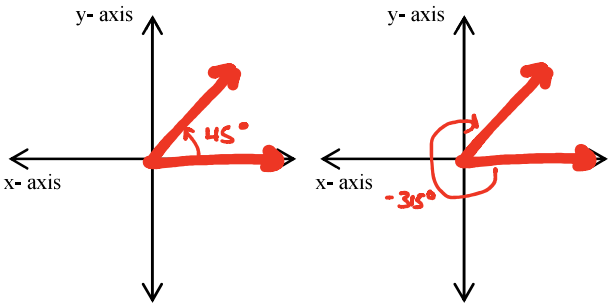
Initial Side of an Angle: A ray in an angle that remains fixed.

Terminal Side of an Angle: A ray in an angle that rotates.



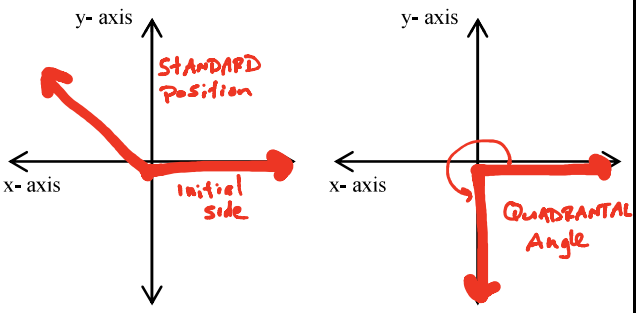
Positive Angle: An angle formed by the terminal side rotating counterclockwise.

Negative Angle: An angle formed by the terminal side rotating clockwise.

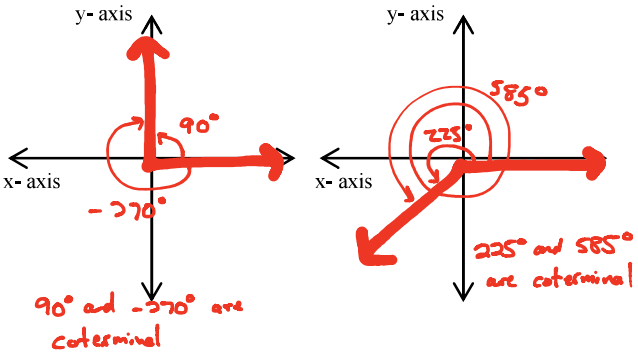


Standard Position: An angle with its vertex at the origin and its initial side along the positive x-axis.

Quadrantal Angle: An angle in standard position whose terminal side coincides with one of the axes.



Coterminal Angles: Two angles in standard position whose terminal sides coincide with each other.



Degrees: An angle has a measure of one degree if it results from $\frac{1}{360}$ of a complete revolution in the positive direction.

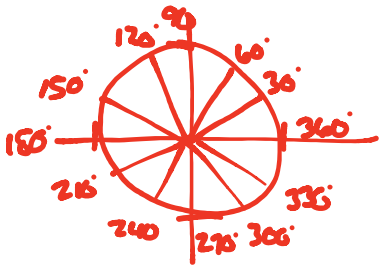
Minutes': Each degree is comprised of 60 of these.

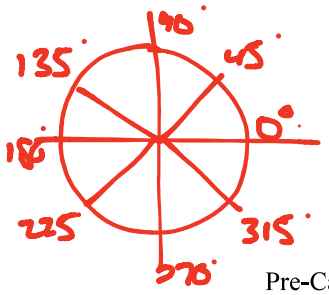
$1^\circ = 60'$

Seconds'': Each minute is comprised of 60 of these.

$1' = 60''$

Draw a circle with radius 1 whose center is at the origin. Label each angle around the circle counting by 30°. Do the same for 45°





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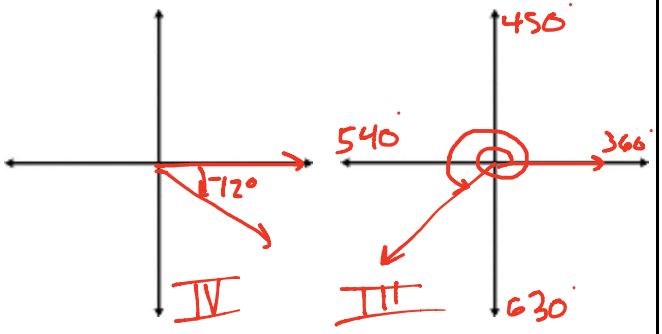
8.1 – Angles & Degrees

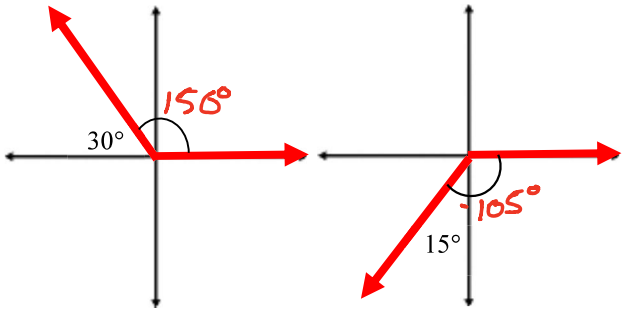
Ex A: Draw an angle in standard position with the given measure and identify the quadrant in which the terminal sides lies.

#1) -12° #2) 570°

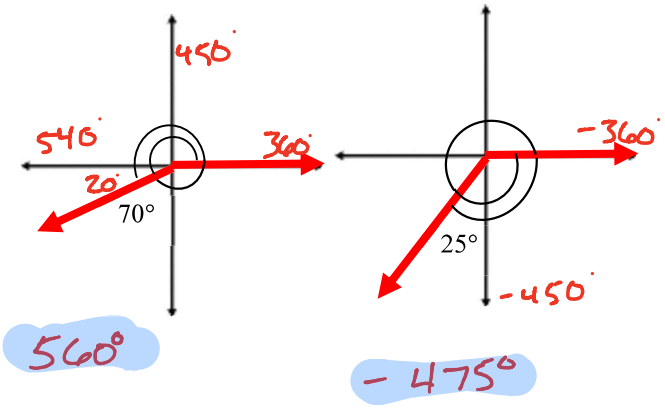


Ex B: Find the measure of each angle in degrees.

#1) #2)



#3) #4)



560° -475°

Ex C: Find one positive angle and one negative angle that is coterminal with each angle.

#1) 100°

positive negative

Coterminal = 100° + 360° = 460°

Coterminal = 100° - 360° = -260°

Ex D: Find a coterminal angle between 0° and 360°.

#1) -70°

Coterminal = -70° + 360° = 290°

Ex E: Find all angles that are coterminal with the given angle.

#1) 57° Coterminal = 57° + 360°n where n is an integer

Ex F: Convert to degrees, minutes and seconds.

#1) 64.34567° = 64° + .34567(60)′ = 64°20.7402′ = 64° 20′ 44.4″

#2) -45.2555555° = -45° 15′ 20″

Ex G: Convert to decimal degrees with a precision of 0.00

#1) -7°12’45” = -7.35°

$-\left(7+\frac{12}{60}+\frac{45}{3600}\right)^{\circ}$

#2) 120°53’22” = 120.89°

$\left(120+\frac{53}{60}+\frac{22}{3600}\right)^{\circ}$