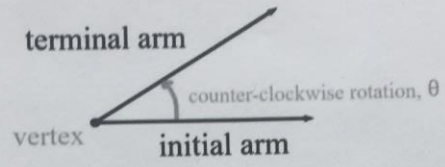
Notes#5 Rotation Angles

The next unit will be **Trigonometry**

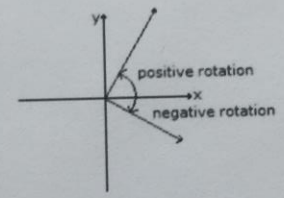
Some of the topics will be 1) rotation angles
2) reference angles
3) coterminal angles
4) CAST Rule
5) Special triangles

Rotation Angles

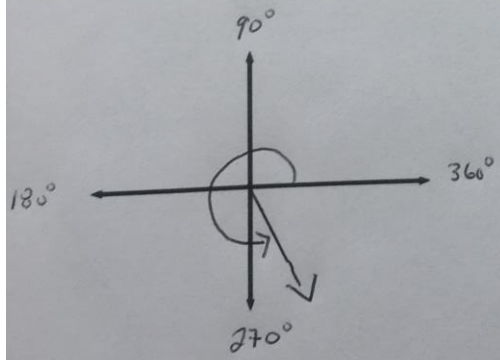


- **standard position** - when the initial arm is on the **positive** *x*-axis and the vertex is at the origin.

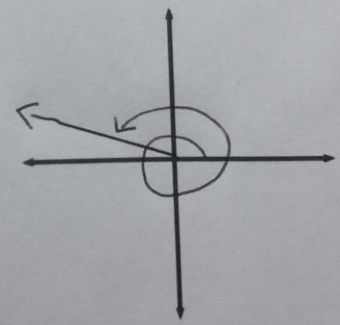
ex: positive rotation - counter clockwise (ccw)



#1: 275°

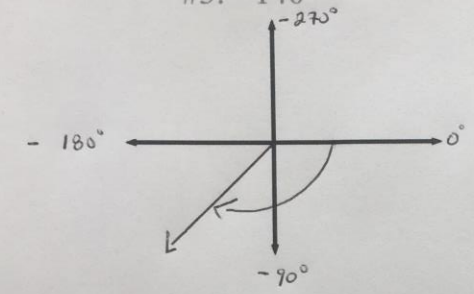


#2: 532°

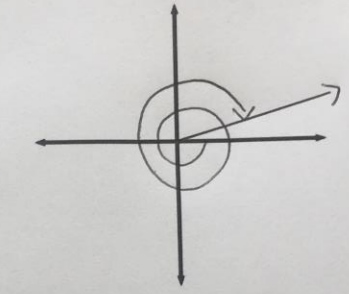


ex: negative rotation - clockwise (cw)

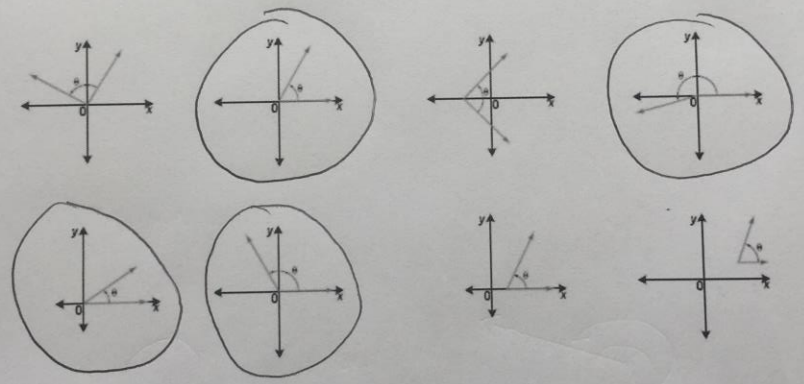
#3: -140°



#4: -714°



Circle the angles that are in standard position.



Definition of Coterminal Angles

Coterminal Angles are angles drawn in standard position that share a terminal side.

For any angle θ, an angle coterminal with θ can be obtained by using the formula $\theta + k \cdot (360^\circ)$, where k is any integer.

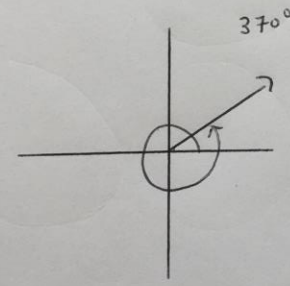
State both a positive and negative angle that would be coterminal with each of the following...

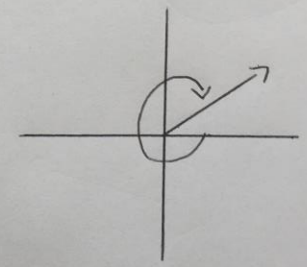
a) 10° b) -235°

Coterminal angles are angles of different size that have their terminal arm in the same place.

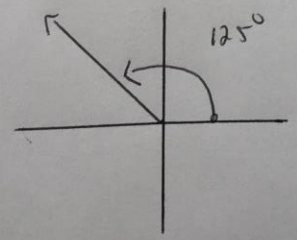
To find coterminals just add or subtract 360°. Any angle will have an infinite number of coterminals.

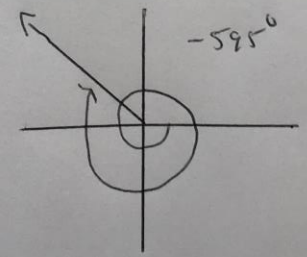
a) 10° $10^\circ + 360^\circ = 370^\circ$ $10^\circ - 360^\circ = -350^\circ$



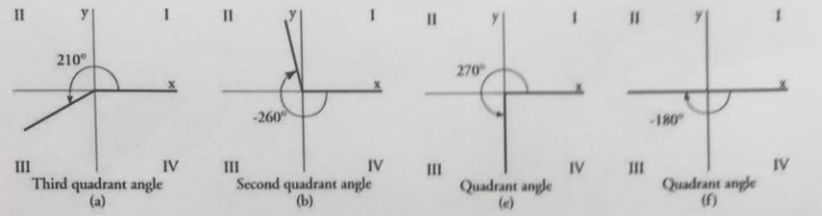


b) $-235^\circ + 360^\circ = 125^\circ$ $-235^\circ - 360^\circ = -595^\circ$





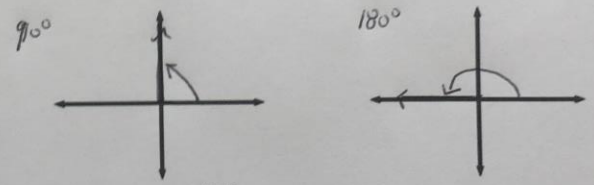
Angles that are in standard position are said to be **quadrantal** if their terminal side coincides with a coordinate axis. Angles in standard position that are not quadrantal fall in one of the four quadrants, as shown below...



Third quadrant angle (a) | Second quadrant angle (b) | Quadrant angle (e) | Quadrant angle (f)

- Quadrantal angle: terminal arm lies on a quadrant boundary (axis)

examples...



Within which quadrant would the terminal arm for each of the following rotation angles be found?

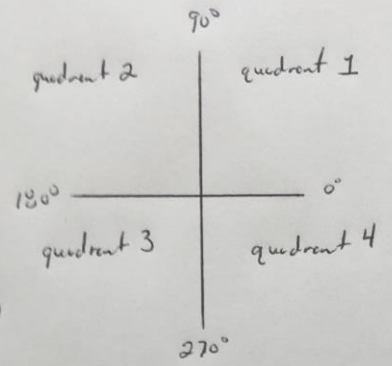
94° (2)

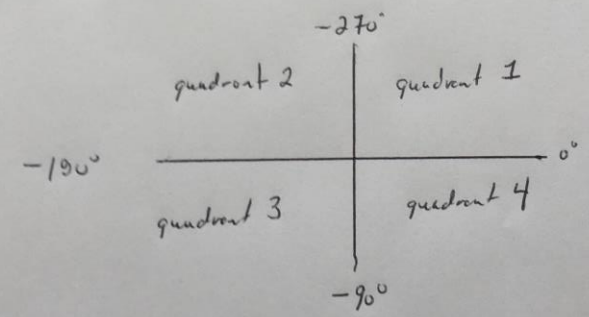
500° (2)

−100° (3)

180°
(between quadrant 2 and 3)

−300° (1)





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