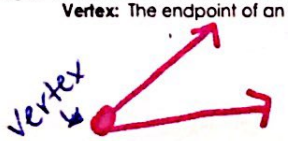
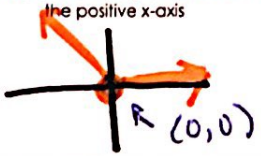
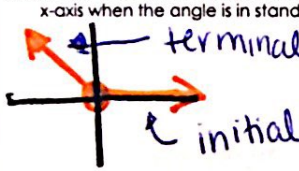
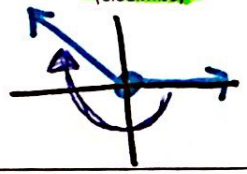
Math 3

7.1a Angles and Coterminal Angles

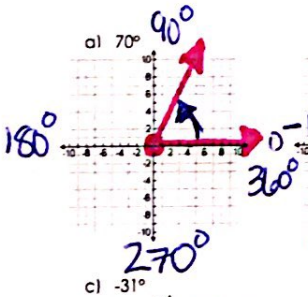
Unit 7

Important Vocabulary

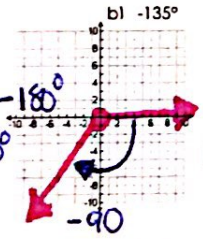
Angle: Formed by two rays with the same endpoint **Vertex:** The endpoint of an angle 	**Standard Position:** When the vertex of an angle is at the origin of the coordinate plane and one ray is on the positive x-axis 
Initial Side: The ray of an angle found on the positive x-axis when the angle is in standard position 	**Terminal Side:** The ray of an angle not found on the positive x-axis when the angle is in standard position (where the angle ends)
Positive Angles: Angles with degrees greater than 0 (counterclockwise) 	**Negative Angles:** Angles with degrees less than o (clockwise) 

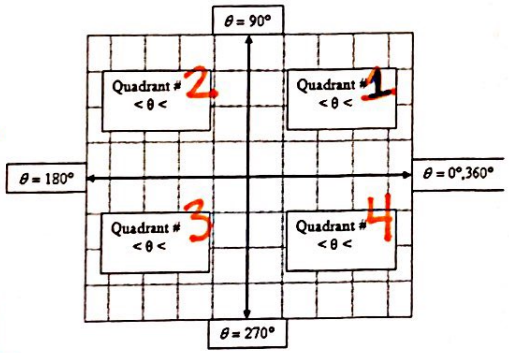
Example 1: Draw an angle with the given measure in standard position.

a) 70°

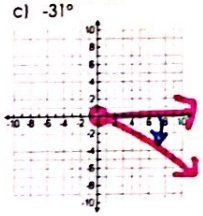


b) -135°

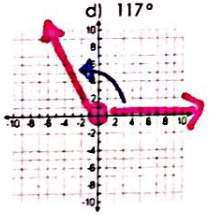




c) -31°



d) 117°



Coterminal Angles: *Two angles in standard position that share the same terminal side*

- To find **positive** coterminal angles: add 360°
- To find **negative** coterminal angles: Subtract 360°

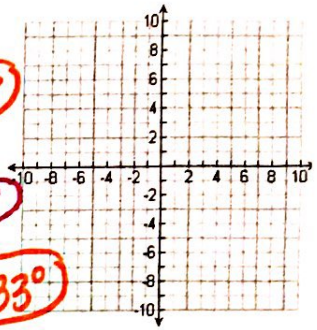
Example 2: Find the measure of a coterminal angle with the listed angle.

a) Find two positive coterminal angles with -410°

$-410 + 360 = -50 + 360° = 310°$ $+360°$ $670°$

b) Find two negative coterminal angles 579°

$579 - 360 = 219 - 360 = -141°$ -360 $-501°$



c) Find one positive and one negative coterminal angles with 227°

$227 + 360 = 587°$ $\quad 227 - 360 = -133°$

d) Find the measure of an angle between 0 and 360° with -321°

$-321 + 360 = 39°$

e) Find the measure of an angle between 0 and 360° with 1054°

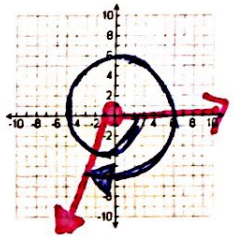
$1054 - 360 = 694 - 360 = 334°$

Example 3: Sketch a graph each of the following in standard position. Be sure that your swoosh marks match the number of turns around the unit circle.

a) -460°

$+360$

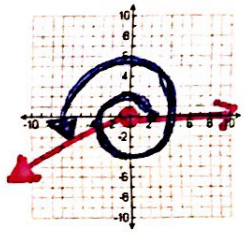
$-100°$



b) 553°

-360

$193°$



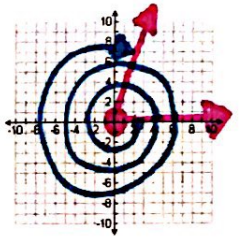
c) -1000°

$+360$

-640

$+360$

$-280°$



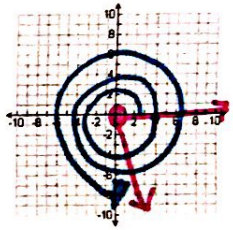
d) 1000°

-360

640

-360

280



☆ When adding your arrow, Start on the initial side and end on the terminal side