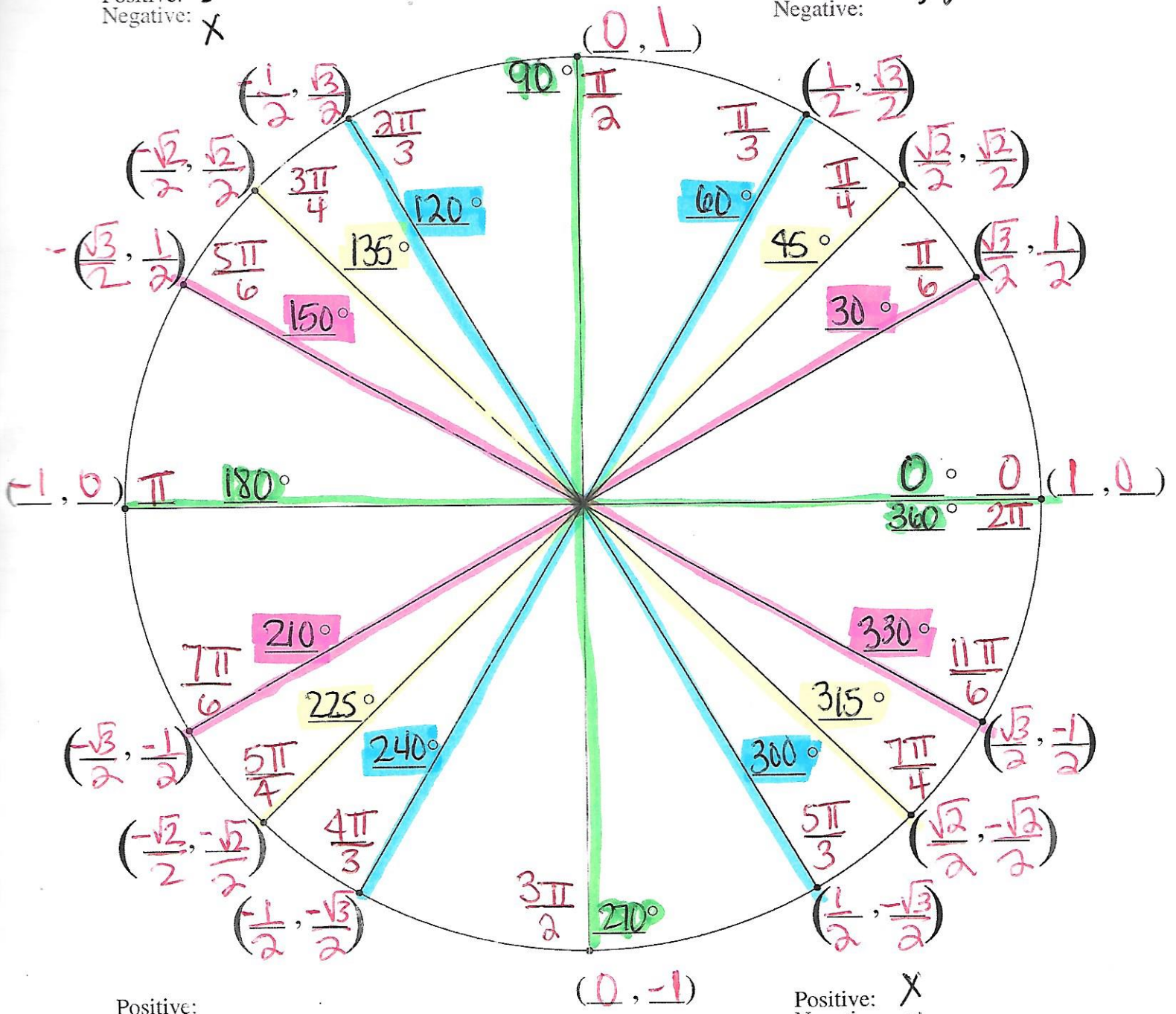


# 4.1 Day 2

## Unit Circle

Positive: y  
Negative: x

Positive: x, y  
Negative:

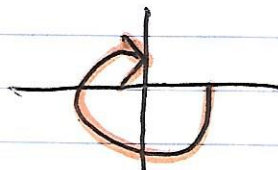
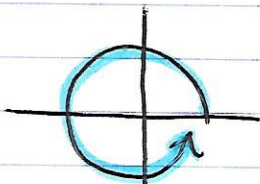
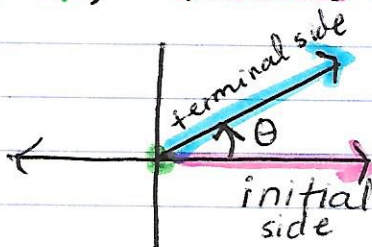


Positive: x, y  
Negative:

Positive: x  
Negative: y

Standard position

- angle in standard position has **vertex**, **initial side**, **terminal side**.



**positive**  $\Delta$ 's are counter clockwise

**Negative**  $\Delta$ 's are clockwise

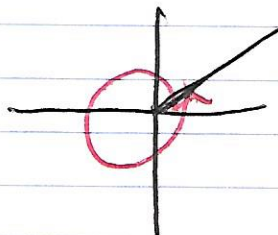
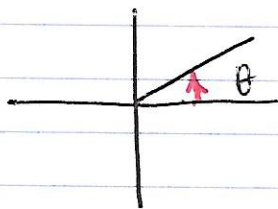
Coterminal angles

two angles are coterminal when they have the same initial & terminal side.

Ex.

$$\frac{\pi}{6}$$

$$\frac{13\pi}{6}$$



a) for a positive angle:

$$\frac{13\pi}{6} - 2\pi = \frac{\pi}{6} \text{ coterminal angle}$$

b) for a negative angle:

$$-\frac{2\pi}{3} + 2\pi = \frac{4\pi}{3} \text{ coterminal angle}$$



Complementary angles

add up to  $90^\circ$  or  $\frac{\pi}{2}$

Supplementary angles

add up to  $180^\circ$  or  $\pi$

} have to be positive

Ex 2. Find the complementary + supplementary angles

a)  $72^\circ$

Complementary:

$$90^\circ - 72^\circ = \textcircled{18^\circ}$$

Supplementary:

$$180^\circ - 72^\circ = \textcircled{108^\circ}$$

b)

$$\frac{2\pi}{5}$$

complementary

$$\frac{\pi}{2} - \frac{2\pi}{5} = \textcircled{\frac{\pi}{10}}$$

Supplementary:

$$\pi - \frac{2\pi}{5} = \textcircled{\frac{3\pi}{5}}$$

Arc Length

$$S = r\theta \quad * \theta \text{ must be in radians}$$

$S \rightarrow$  arc length  $r$ -radius  $\theta$ -Angle