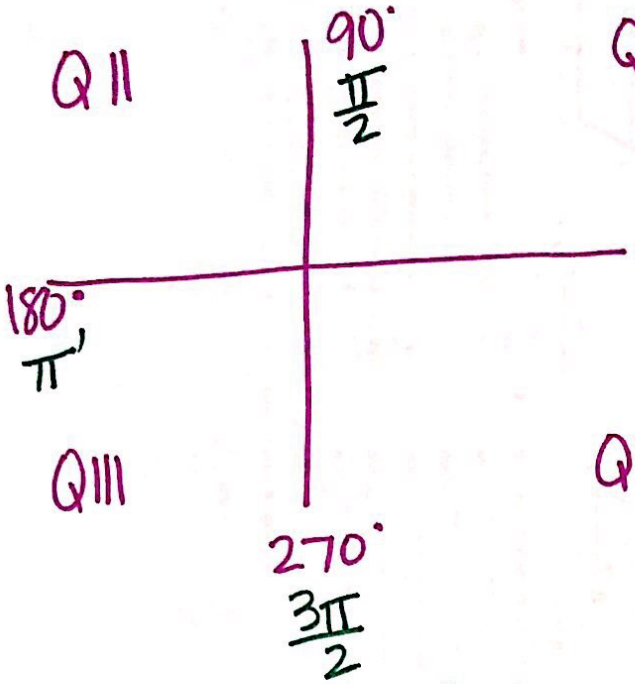
7.2: Angles and their measures



A full revolution is 360° or 2π radians

conversion factor:
180° = π ra

convert to radians

Ex 1) $100^\circ \left(\frac{\pi}{180^\circ}\right) = \frac{100\pi}{180} = \boxed{\frac{5\pi}{9}}$

Ex 2) $-825^\circ \left(\frac{\pi}{180^\circ}\right) = \frac{-825\pi}{180} = \boxed{\frac{-55\pi}{12}}$

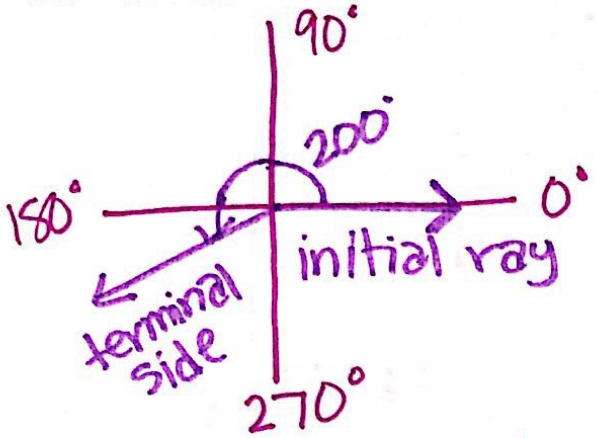
convert to degrees

Ex 3) $\frac{11\pi}{4}\left(\frac{180^\circ}{\pi}\right) = \frac{11 \cdot 180^\circ}{4} = \boxed{495^\circ}$

Ex 4) $\frac{\pi}{6}\left(\frac{180^\circ}{\pi}\right) = \frac{180^\circ}{6} = \boxed{30^\circ}$

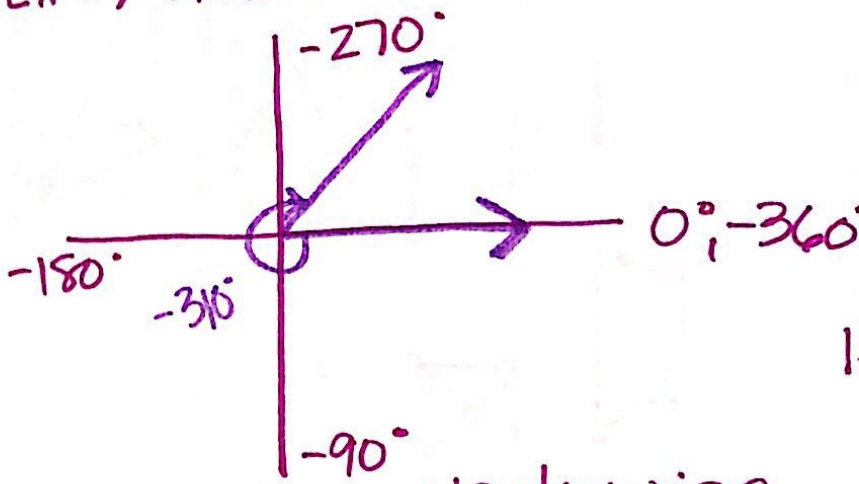
Sketching Angles

Ex 5) Sketch 200°



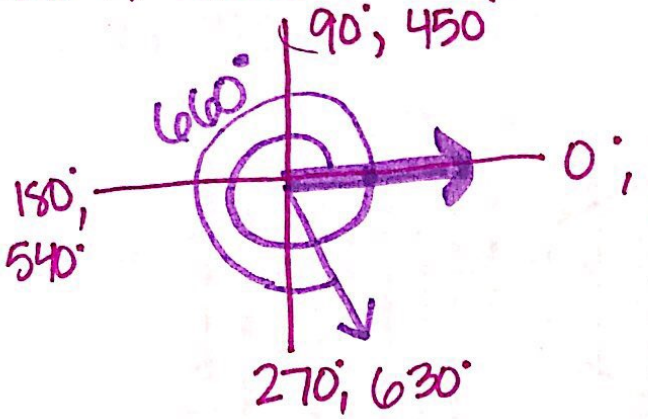
positive = counter clock-wise

Ex 6) Sketch -310°

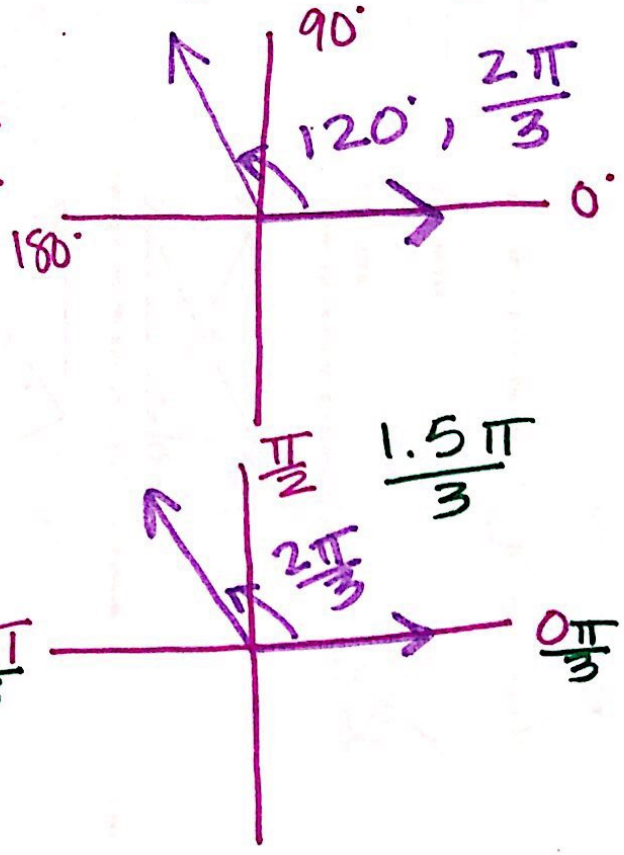


negative = clock-wise

Ex 7) Sketch 660°

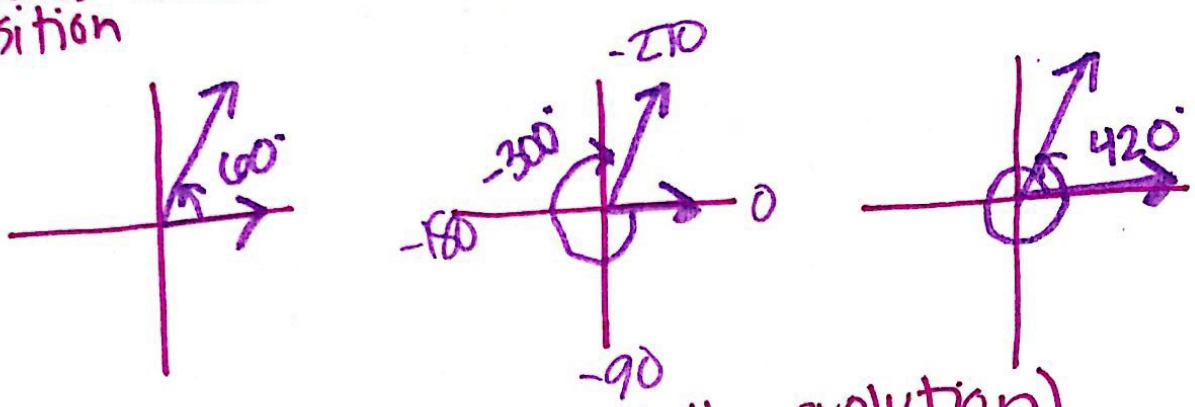


Ex 8) Sketch $\frac{2\pi}{3}\left(\frac{180^\circ}{\pi}\right) = 120^\circ$



Coterminal Angles

- angles with terminal ray in the exact same position



in degrees: +/- 360° (full revolution)

in radians: +/- 2π (full revolution)

Find a positive & negative coterminal angle for:

Ex 9) $72° + 360° = \boxed{432°}$

$72° - 360° = \boxed{-288°}$

Ex 10) $\frac{3\pi}{4} + 2\pi = \boxed{\frac{11\pi}{4}}$

$\frac{3\pi}{4} - 2\pi = \boxed{\frac{-5\pi}{4}}$

Ex 11) $-690° + 360° = \boxed{-330°}$ $+360° = \boxed{30°}$