

Lesson 68 Objective: SWBAT rewrite trigonometric functions with positive acute angles.

Kickoff-

1) Determine the quadrant in which the terminal side of the given angle lies.

- a) $\csc x > 0$ and $\cot x < 0$ II S I A
 b) $\sin x < 0$ and $\sec x > 0$ IV T I C

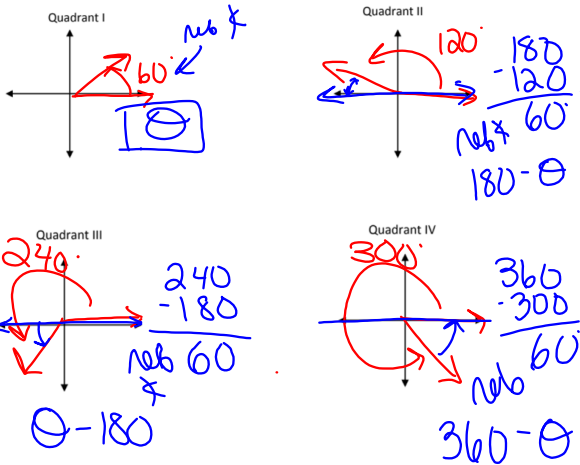
2) Find the supplement if possible in radians.

- a) $\frac{5\pi}{12}$ b) $\frac{5\pi}{3} \cdot \frac{180}{\pi} = \frac{5(180)}{3} = 300$
 $\pi - \frac{5\pi}{12} = \frac{12\pi}{12} - \frac{5\pi}{12} = \frac{7\pi}{12}$ $\pi - \frac{5\pi}{3} = \frac{3\pi}{3} - \frac{5\pi}{3} = -\frac{2\pi}{3}$

HW

A **reference angle** is the acute angle formed by the terminal side of the given angle and the x-axis.

- Reference angles may appear in all four quadrants.
- Angles in quadrant I are their own reference angles.



Find the reference angles of the following angle measures:

- 1) 115° II 3) 495°
 $180 - 115 = 65$ $360 - 310 = 50$ $180 - 135 = 45$
 4) 250° 70 5) 210° 30 6) 45

Rewriting Trigonometric Functions as Positive Acute Angles

Writing Positive Acute Angles:

- Q: Quadrant
- R: Reference Angle
- F: Function (sin, cos, tan, csc, sec, cot)
- S: Sign (positive or negative)

S I A
T I C

Examples: Rewrite each of the following as a function of a positive acute angle

- 1) $\sin 189^\circ$ -0.36
 Q: III
 R: $189 - 180 = 9$
 F: Sin
 S: -
 $-\sin 9$
- 2) $\tan 315^\circ$
 Q: IV
 R: $360 - 315 = 45$
 F: Tan
 S: -
 $-\tan 45$
- 3) $\cos 545^\circ$
 $-\cos 5$

4) $\tan (-250^\circ)$

- 1360
 $\tan 110^\circ$
 Q: II
 R: $180 - 110 = 70$
 F: tan
 S: -
 $-\tan 70$

5) $\sec (-240^\circ)$

$-\sec(60)$

6) $\cot \frac{5\pi}{4}$

