

Aim: How do we convert between radians and degrees?

Get Ready:

In which quadrant does the radius terminate if (#'s 1-3):

1. $\sin \theta < 0$ & $\cos \theta > 0$ 2. $\tan \theta > 0$ & $\cos \theta < 0$

3. $\tan \theta < 0$ & $(\sin \theta)(\tan \theta) < 0$

4. Why is the value of $\tan \theta$ positive in Quadrant III?

5. Why is the value of $\sin \theta$ positive in Quadrant II?

6. Why is the value of $\cos \theta$ positive in Quadrant IV?

I. Find the reference angles of the following rotations.

a. 75° b. 135°

c. 210° d. 300°

e. -150° f. 840°

II. Convert Degrees to Radians (rad)

Fractions equal to one (conversion fraction)

$$30^\circ * \frac{\pi \text{ radians}}{180^\circ} =$$

a) 75° b) 60°

c) 90°

d) 300°

e) -60°

f) -45°

g) -330°

h) 150°

III. Convert Radians to degrees

$$\frac{5\pi}{3} * \frac{180^\circ}{\pi \text{ radians}}$$

or substitute in 180 for π $\frac{5(180)}{3}$

a) $\frac{\pi}{4}$ b) $\frac{3\pi}{2}$

c) $\frac{4\pi}{5}$ d) $\frac{11\pi}{6}$

e) $-\frac{\pi}{2}$ f) $-\frac{2\pi}{3}$

Radians

Name:

Section:

g) $\frac{5\pi}{6}$

h) $-\frac{\pi}{6}$

i) $\frac{11\pi}{6}$

j) $-\frac{7\pi}{4}$

i) $-\frac{\pi}{3}$

j) $\frac{3\pi}{4}$

V) The following angles are given in degrees. Convert them to radians. Find the reference angle in radians.

a) 120

b) 210

c) -50

d) 315

IV. Find the reference angle of the following rotations. Give the answer in degrees.

a. $\frac{3\pi}{4}$

b. $\frac{5\pi}{4}$

e) -135

f) 80

c. $\frac{7\pi}{4}$

d. $\frac{2\pi}{3}$

VI) The following angles are given in radians. Convert them to degrees. Then give their reference angles if they have one (in radians).

a) $\frac{7\pi}{6}$

b) $\frac{2\pi}{3}$

e. $\frac{5\pi}{3}$

f. $\frac{4\pi}{3}$

c) $\frac{5\pi}{4}$

d) $\frac{5\pi}{6}$

e) $-\frac{7\pi}{4}$

f) $\frac{\pi}{5}$

g. $\frac{5\pi}{6}$

h. $\frac{7\pi}{6}$

g) $\frac{5\pi}{3}$

h) $-\frac{11\pi}{6}$