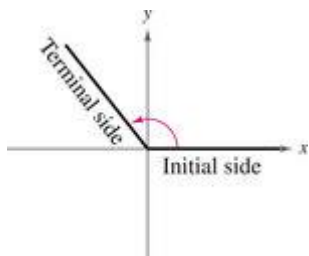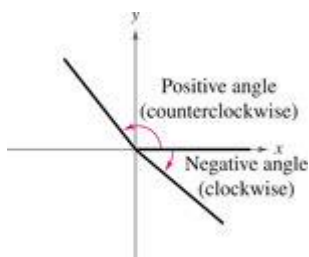# Radian Measure

1. It is convenient to position an angle on a coordinate graph with the vertex at the

   _____ and the initial side on the _____.

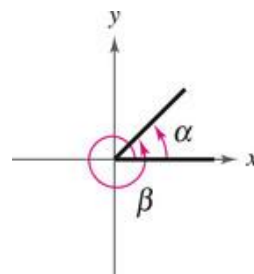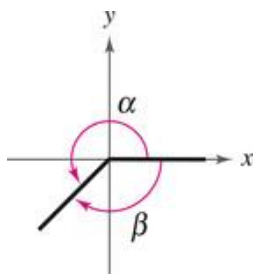   This is called _____ position.

2. Positive angles are generated by _____.

   Negative angles are generated by _____.

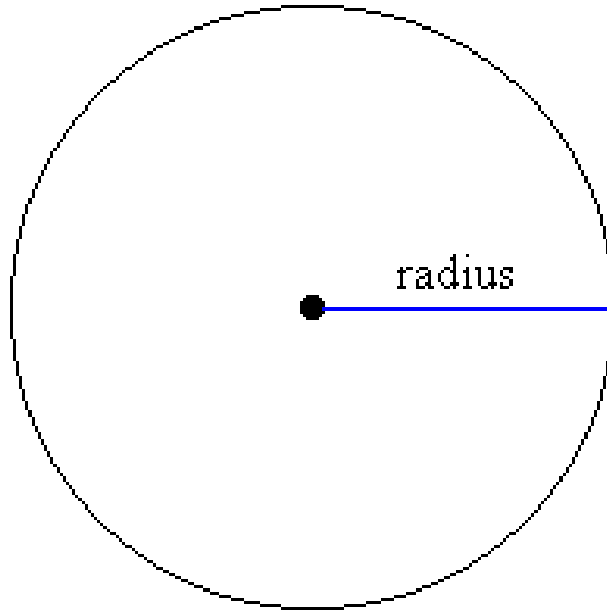3. Angles that have the same initial and terminal sides are called _____.

   Radian Measure

4. The measure of an angle is determined by _____

   _____.

Radian Measure

radius

Definition of Radian

One radian is the measure of a central angle θ that intercepts an arc equal in length to the radius of the circle.

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5. From the above exercise ***about*** how many radians are there in one full revolution?

6. One full revolution is exactly _____ radians.

Converting Between Degrees and Radians

7. One full revolution is _____ radians or _____ degrees. This leads to the

following equations: _____ and _____.

Conversion Factors that are Equal to 1

$$\frac{\pi}{180} \quad \text{and} \quad \frac{180}{\pi}$$

Radian Measure

Example 1: Convert from degrees to radians.

        a) 135 degrees   b) 540 degrees   c) -270 degrees

Example 2: Convert from radians to degrees.

        a) $-\dfrac{\pi}{2}$ radians   b) 2 radians   c) $\dfrac{9\pi}{2}$ radians

Finding and Sketching Coterminal Angles

Example: Find two coterminal angles by adding and subtracting 2π. Sketch.

a) $\theta = \dfrac{13\pi}{6}$ b) $\theta = \dfrac{3\pi}{4}$ c) $\theta = -\dfrac{2\pi}{3}$

d) $\theta = \dfrac{9\pi}{4}$ e) $\theta = \dfrac{5\pi}{6}$ f) $\theta = -\dfrac{3\pi}{4}$

g) $\theta = 60°$ e) $\theta = 300°$ f) $\theta = -210°$