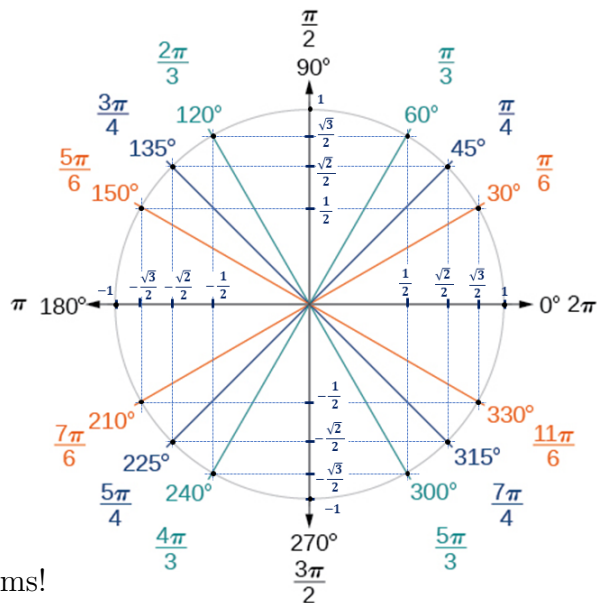# Sine and Cosine

You may use the labelled unit circle to the right to aid in your computations on this sheet.

The diagram shows degree and radian measures for basic angles around the circle as well as the coordinates of corresponding points on the unit circle. Colors group angles by common reference angle.

- x-coordinates are values of $\cos(\theta)$
- y-coordinates are values of $\sin(\theta)$

You will need to learn these values before the quiz and exams!

1. For the angles below, state their **quadrant**, **reference angle**, and values of **sin** and **cos**.

- $\theta = 210°$

  Quadrant = ☐ $\sin(\theta) = $ ☐

  Ref. Angle = ☐ $\cos(\theta) = $ ☐

- $\theta = \dfrac{5\pi}{3}$

  Quadrant = ☐ $\sin(\theta) = $ ☐

  Ref. Angle = ☐ $\cos(\theta) = $ ☐

- $\theta = 480°$

  Quadrant = ☐ $\sin(\theta) = $ ☐

  Ref. Angle = ☐ $\cos(\theta) = $ ☐

- $\theta = \dfrac{17\pi}{6}$

  Quadrant = ☐ $\sin(\theta) = $ ☐

  Ref. Angle = ☐ $\cos(\theta) = $ ☐

- $\theta = -135°$

  Quadrant = ☐ $\sin(\theta) = $ ☐

  Ref. Angle = ☐ $\cos(\theta) = $ ☐

- $\theta = -\dfrac{5\pi}{4}$

  Quadrant = ☐ $\sin(\theta) = $ ☐

  Ref. Angle = ☐ $\cos(\theta) = $ ☐

2. Convert between sin and cos in the given quadrant.
   (Use Pythagorean relation $\sin^2\theta + \cos^2\theta = 1$ and knowledge about signs in different quadrants.)

   - If $\sin(\theta) = \dfrac{1}{5}$ and θ is in QII, find $\cos(\theta)$.

   - If $\cos(\theta) = -\dfrac{3}{7}$ and θ is in QIII, find $\sin(\theta)$.

   - If $\sin(\theta) = -\dfrac{2}{5}$ and θ is in QIV, find $\cos(\theta)$.

   - If $\cos(\theta) = \dfrac{1}{3}$ and θ is in QIV, find $\sin(\theta)$.

   (Online homework questions #18-20 are like these...)