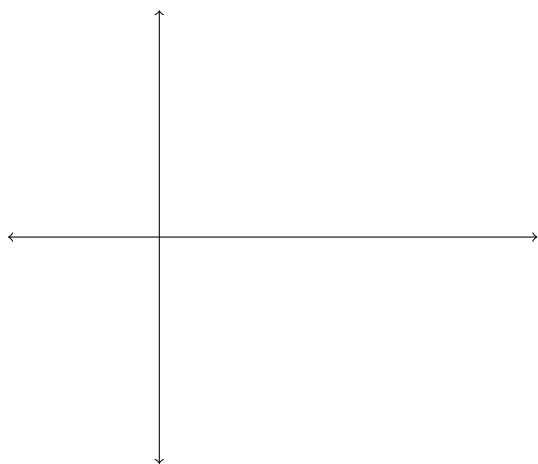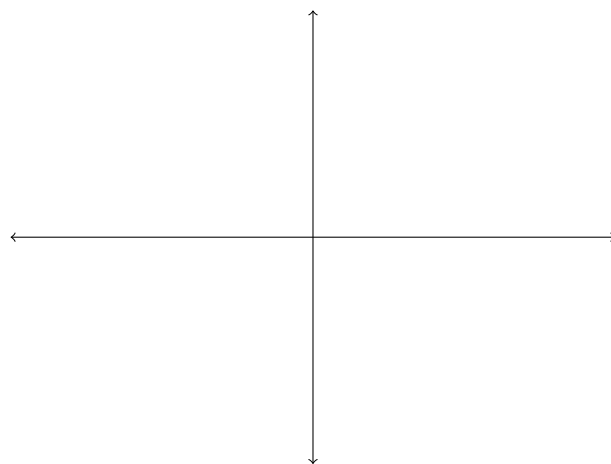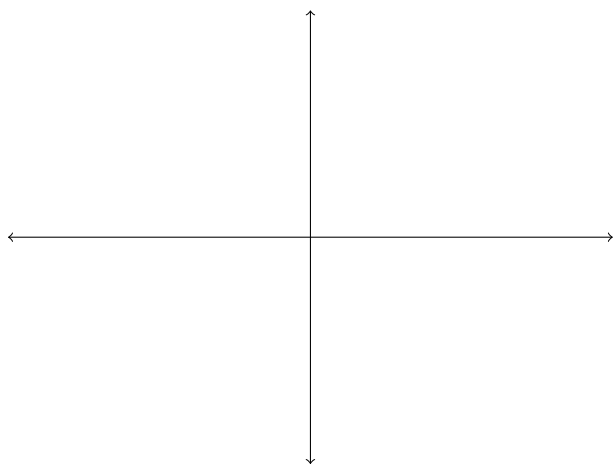# REVIEW DAY 3: TRIGONOMETRY REVIEW

Three Views of Trigonometric Functions

- graphs in the xy-plane
- sides of a right triangle
- points on the unit circle

The Graphs

On the axes below, graph *at least two cycles* of $f(x) = \sin x$, $f(x) = \cos x$, and $f(x) = \tan x$. **Label all x- and y-intercepts, any asymptotes, and all maximums and minimums.**
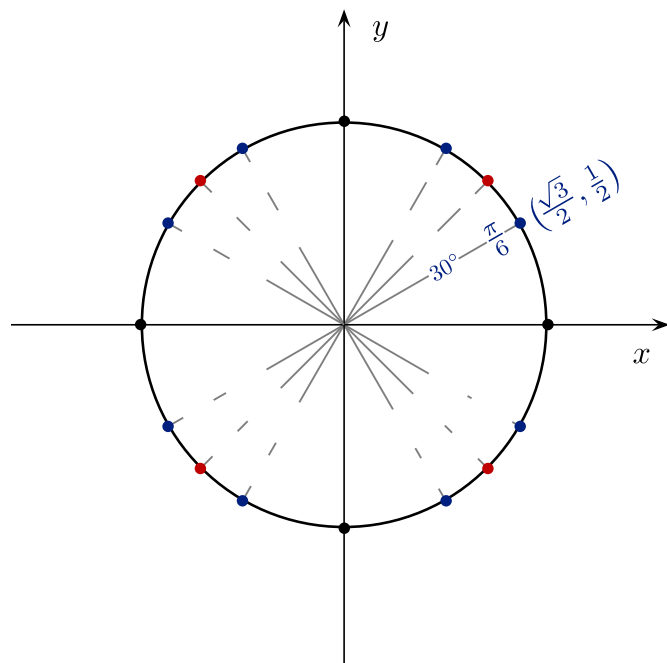
The Triangle Defintion

Sketch a right triangle with side a adjacent to an angle θ, o opposite of the angle θ and hypotenuse h. Define each of the six trigonometric functions in terms of that triangle.

a) $\sin\theta$ 　　　 b) $\cos\theta$ 　　　 c) $\tan\theta$ 　　　 d) $\sec\theta$ 　　　 e) $\csc\theta$ 　　　 f) $\cot\theta$

The Unit Circle Approach

Using a 45-45-90 triangle and a 30-60-90 triangle find the coordinates of ALL of the points on the unit circle.

Each of the problems below can be solved using one of the approaches above: graphs, triangles, or unit circle. When you solve each problem, think about which method is the best one.

1. An isosceles triangle has a height of 10 ft and its base is 8 feet long. Determine the sine, cosine and tangent of the base angle α.
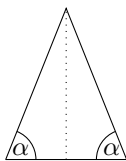
2. Without a calculator evaluate:

   (a) $\sin\left(\frac{2\pi}{3}\right)$

   (b) $\cos\left(\frac{5\pi}{4}\right)$

   (c) $\tan\left(\frac{-\pi}{4}\right)$

3. Solve for x.

   (a) $\cos x = 1$

   (b) $\sin x = 1$

   (c) $\tan x = 0$

   (d) $\sin x = 1/2$ (Find all solutions in $[0, 2\pi]$.)

4. Find the domain of $f(x) = \csc(x/2)$.

5. Solve the equation $2 + 2\cos(x) = 0$.

6. Determine the x-value(s) where the functions $g(x) = x + \sin(x - 1)$ and $h(x) = 1 + x$.