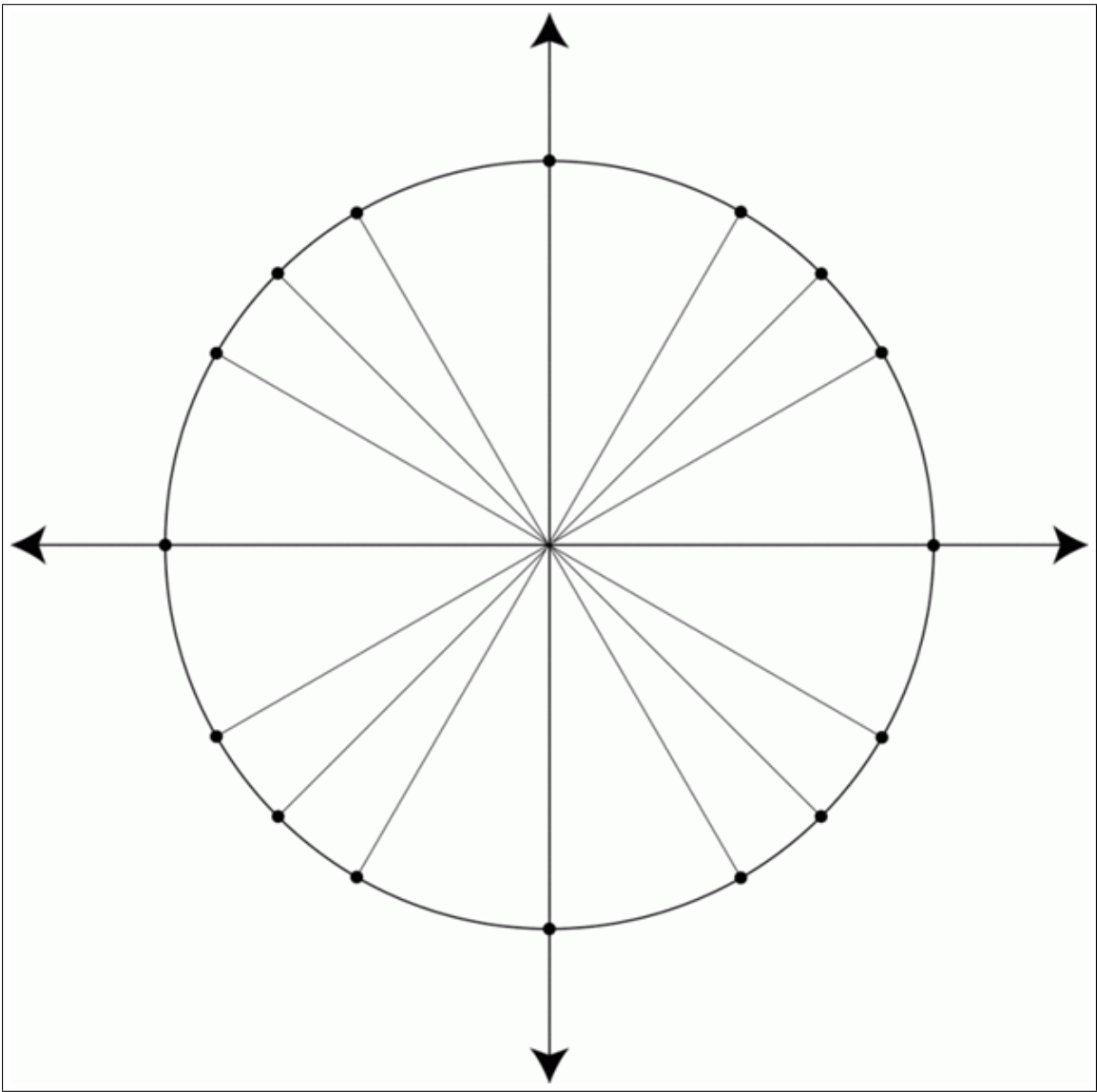**Problem 1.** The *unit circle* is the circle centered at the origin of radius one. Its equation is

$$x^2 + y^2 = 1.$$

    Below is a diagram of the unit circle. The indicated angles are all multiples of 30° or 45°.

    Next to each indicated by on the circle, label the angle measure in degrees and in radians, and also write the coordinates of the point.

deg(θ)	rad(θ)	sin(θ)	cos(θ)	tan(θ)	cot(θ)	sec(θ)	csc(θ)
0°	0	0	1	0	∞	1	∞
30°	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$	$\frac{2\sqrt{3}}{3}$	2
45°	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	1	$\sqrt{2}$	$\sqrt{2}$
60°	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{3}}{3}$	2	$\frac{2\sqrt{3}}{3}$
90°	$\frac{\pi}{2}$	1	0	∞	0	∞	1

Problem 2. Use the given formula to compute the indicated value.

(a) Use: $\cos(A - B) = \cos(A)\cos(B) + \sin(A)\sin(B)$ Compute: $\cos(15°)$

(b) Use: $\sin(A - B) = \sin(A)\cos(B) - \sin(B)\cos(A)$ Compute: $\sin(15°)$

(c) Use: $\cos\frac{\theta}{2} = \sqrt{\frac{1 + \cos\theta}{2}}$ Compute: $\cos\left(\frac{\pi}{8}\right)$

(d) Use: $\sin\frac{\theta}{2} = \sqrt{\frac{1 - \cos\theta}{2}}$ Compute: $\sin\left(\frac{\pi}{8}\right)$