Handout for MATH 1300 (Barsamian) Lecture L30 Fri Oct 23, 2026 Section 4.2 Unit Circle

[1] (a) Draw a 45-45-90 triangle with hypotenuse 1. Label the angles with their degree measure and radian measure. label the three sides of the triangle with their lengths. (exact expressions, not decimal approximations.)
(b) Do the same thing for a 30-60-90 triangle with hypotenuse 1.

[2] The objective is to draw a big unit circle and label it for use in trig problems.

(a) Draw a pair of x, y axes and then draw a really big circle centered at the origin. We will consider this to be a unit circle.

(b) Draw diameter segments through the origin at $30°, 45°, 60°, 120°, 135°, 150°$.

(c) There are twelve radial segments emanating from the origin. Label each radial segment with its degree measure and its radian measure. (exact expressions, not decimal approximations.) Put your labels along the segment, inside the circle. Don't put the labels outside the circle. We're going to want that spot for part (d).

(d) Label the points where each radial segment intersects the unit circle with their (x, y) coordinates. Put the coordinates just outside the unit circle. (exact expressions, not decimal approximations.)

[3] Use your unit circle to find the following values (exact expressions, not decimal approximations)

$(a)\ \sin\left(\frac{3\pi}{4}\right) =$

$(b)\ \sec\left(\frac{3\pi}{4}\right) =$

$(c)\ \tan\left(\frac{3\pi}{4}\right) =$

$(d)\ \csc\left(\frac{5\pi}{6}\right) =$

$(e)\ \cot\left(\frac{5\pi}{6}\right) =$

$(f)\ \sec(225°) =$

$(g)\ \tan(225°) =$

$(h)\ \sin(-60°) =$

$(i)\ \sec(-60°) =$

$(j)\ \cot(-60°) =$

Have a great weekend!