Lecture 10 (L10): Using Identities
Textbook Section: 5.1

Review:
  Trigonometric Identities:
    Reciprocal Identities:

    Quotient Identities:

    Pythagorean Identities:

    Cofunction Identities:

    Even/Odd Identities:
Using the Identities to Solve Problems:

To solve problems using the identities, it is important to know the relationships between the trigonometric functions.

Problem: Given the real number $u$ and $\sec(u) = -\frac{3}{2}$ and the tangent value of the real number is negative, find the values for the other five trigonometric functions.

Problem: Simplify.

\[
cos^2(x) \cdot \csc(x) - \csc(x)
\]

\[
\sin(x) \cdot \cos^2(x) - \sin(x)
\]
Problem: Factor.

\[ 1 - \sin^2(x) \]

\[ 2\cot^2(\theta) - 7\cot(\theta) + 6 \]

\[ \csc^2(z) - \cot(z) - 3 \]

Problem: How can we add or subtract two trigonometric expressions?
Problem: Write $\frac{1}{1 + \cos(x)}$ so that it is not in fractional form.

Problem: Given a right triangle with acute angle $\theta$ with side opposite $x$ and side adjacent 2. Write $\sqrt{4 + x^2}$ as a trigonometric function of $\theta$. 