Ch 7 - Analytic Trig (p. 526).

A. Discussion of Analytic vs. Synthetic Principles.

B. Ch. Overview (p. 527).

1. Deal w/ Trig Identities, such as \( \cos^2 t + \sin^2 t = 1 \)
2. Deal w/ solving Trig equations, such as
   a. \( \sin t - \frac{1}{2} = 0 \)
   b. Review
   i. Solve \( x + 5 = 4x - 1 \)
      \[ \text{Solve} \quad x + 5 = 4x - 1 \]
      \[ \text{Solution set:} \quad \{2\} \]
   ii. Solve \( x^2 + 6 = -5x \)
      \[ \text{Solve} \quad x^2 + 6 = -5x \]
      \[ x^2 + 5x + 6 = 0 \]
      \[ (x + 2)(x + 3) = 0 \]
      \[ x = -2 \quad \text{or} \quad x = -3 \]
      \[ \{-2, -3\} \]

Back to a. \( \sin t - \frac{1}{2} = 0 \) radians
   \[ \text{Solve} \quad \sin t = \frac{1}{2} \]
   (Think: sine of what(??) equals \( \frac{1}{2} \)?)
   \[ \frac{\pi}{6} \]
   is in the sol. set.

\[ \frac{5\pi}{2} \] is in the sol. set.

Also \[ \frac{\pi}{6} + 2k\pi \quad k = 0, \pm 1, \pm 2, \pm 3, \ldots \]
\[ \frac{5\pi}{6} + 2k\pi \quad k = 0, \pm 1, \pm 2, \pm 3, \ldots \]
The soln set \( \exists t \mid t = \frac{\pi}{6} \pm 2k\pi \) or \( t = \frac{5\pi}{6} \pm 2k\pi \), \( k = 0, 1, 2, 3, \ldots \).

II §7.1: Trig Id. (p. 528)

A. Review Trig ID's -- Chart. (p. 528)  
Know this chart.

B. Simplify Trig Expressions (p. 528).

1. See examples in book.


   a. #12. \( \cos^3\theta + \sin^2\theta \cos \theta \)

   Soln. \( \cos^3\theta + \sin^2\theta \cos \theta = \cos \theta (\cos^2\theta + \sin^2\theta) \)

   \( = \cos \theta \cdot 1 = \cos \theta \)

   \( \therefore \cos^3\theta + \sin^2\theta \cos \theta = \cos \theta \)

   

   b. #22. \( \frac{1 + \cot A}{\csc A} \)

   Soln. \( \frac{1 + \cot A}{\csc A} = \frac{1 + \frac{\cos A}{\sin A}}{\frac{1}{\sin A}} = \sin A \left(1 + \frac{\cos A}{\sin A}\right) \)

   \( = \sin A + \cos A \).

   \( \therefore \frac{1 + \cot A}{\csc A} = \sin A + \cos A. \)

I left early -- we did "Teacher Evaluation" today.