Section 6.1 Learning Objectives:

- Video 1: The Graphs of Sine and Cosine (10:01)
  - State the coordinates of the key values of the sine and cosine functions.
  - Understand the relationship between the unit circle and the graphs of the sine and cosine functions.
- Video 2: The Negative Angle Identities (3:58)
  - State the the negative angle identities for the sine and cosine functions.
  - Understand the relationship between the unit circle and the negative angle identities.
- Video 3a: The Key values of Transformed Trigonometric Functions (Part 1) (10:50)
  - State the definition of the amplitude, midline, period, and horizontal shift of a transformed trigonometric function.
  - Determine the amplitude, midline, period, and horizontal shift of a transformed trigonometric function from an equation.
- Video 3b: The Key values of Transformed Trigonometric Functions (Part 2) (6:44)
  - Determine the coordinates of the key values of a trigonometric function from the equation.
- Video 4a: Transformed Sinusoidals (Part 1) (8:52)
  - Graph a transformed trigonometric function.
- Video 4b: Transformed Sinusoidals (Part 2) (6:13)
  - Determine the amplitude, midline, period, and horizontal shift of a transformed trigonometric function from a graph.
  - Determine the equation of a transformed trigonometric function from a graph.

Individual Learning Objective Binder Check: Before class, you should have completed the Learning Objective Worksheet for each of the learning objectives in the video. These should have been placed in a binder in an organized manner so that it can be quickly checked by the instructor. If you have specific questions, this is a good time to ask the professor about them. While you are waiting for the professor to make their way around the room, you can work on the rest of the activities.

Group Practice Problems: In a group of no more than 3 students, work on the following problems. While everyone in the group should work together, each student should write out their work for themselves. This work can prove to be helpful when working on the homework assignment. If questions arise as you're working on these problems, feel free to seek help from the instructor or other groups of students.

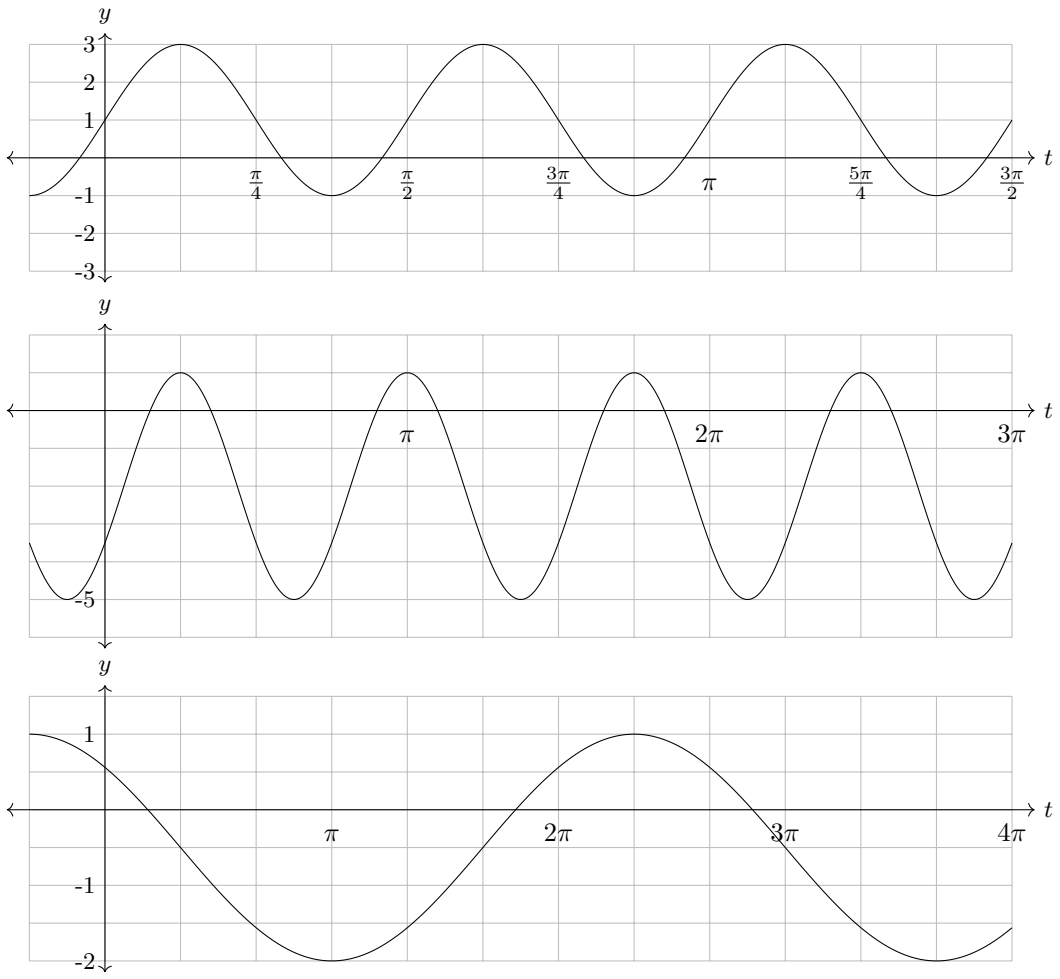
Group Practice Problems #1 - The Sine and Cosine Graphs: Sketch the graphs of $y = \sin(t)$ and $y = \cos(t)$. State the domain and range of these functions and locate all of the key values for both functions. Determine the coordinates of the next two minimum values, next two maximum values, and next four zeros to the left and to the right of the fundamental period.

Group Practice Problems #2 - Negative Angle Identities: Starting from the negative angle identities for the sine and cosine functions, derive the negative angle identities for the tangent, cotangent, secant, and cosecant functions. Determine which of the six trigonometric functions are even and which of them are odd.

Group Practice Problems #3 - Graphing Sinusoidal Functions: State the amplitude, midline, period, and horizontal shift of the following functions. Then sketch the graphs of the following functions, including the midline. Your graph should include both the fundamental period and at least half of the period to the left and to the right of the fundamental period. Identify the coordinates of the key values.

- $y = -2\sin\left(2\left(t - \frac{\pi}{3}\right)\right) + 1$
- $y = 3\cos\left(\pi\left(t + 2\right)\right) - 4$
- $y = 5\sin\left(\frac{1}{2}\left(t + \frac{3\pi}{4}\right)\right) + 2$

Group Practice Problems #4 - Determining the Equations of Graphs: Determine two equations for each of the graphs. One of the equations should be a sine function and the other should be a cosine function.



Group Work Check: Present your work for the practice problems to the instructor for approval. The work will not be graded deeply, but simply graded on whether it appears that you have put in a good faith effort to do the work. If you are not confident about particular problems, this is a good time to ask about them.

Section 6.1 Homework:

- 6.1 (General Problems): #1, 5, 7, 9, 11 (also graph it), 15 (also graph it), 19
- 6.1 (Write-Up): #21, 24