MODULE 9

THE TRIGONOMETRIC FUNCTIONS

Name:_____ Points:_____

Exercise 1. Find the trigonometric function values. Assume that $\cos(\beta) = -\frac{5}{13}$, and that β is in quadrant III. Find $\sin(\beta) =$

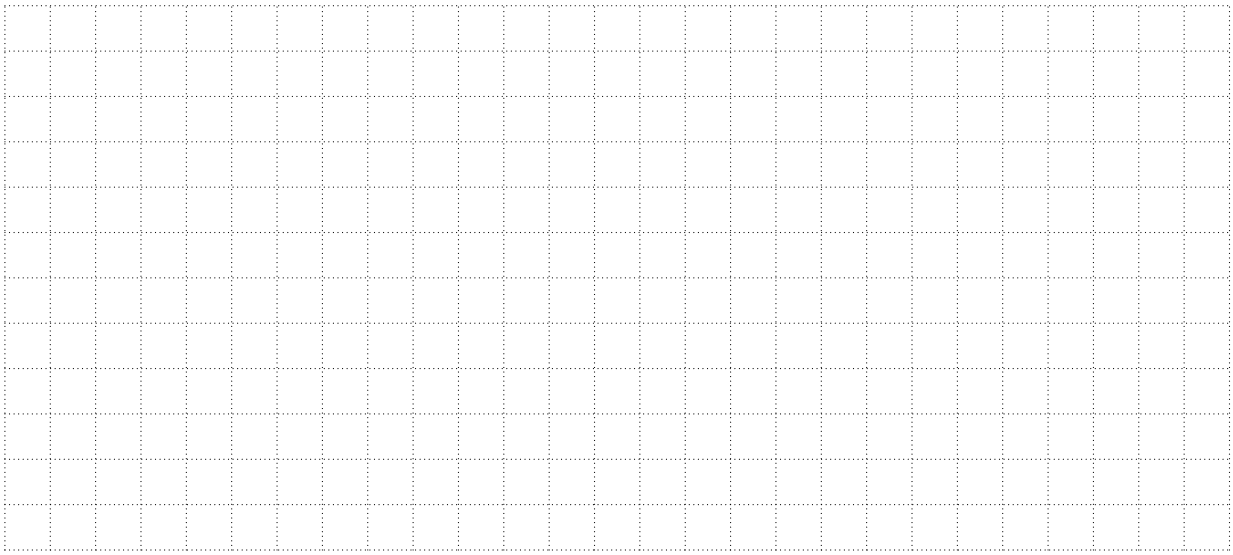
Exercise 2. Find the amplitude, period, and phase shift. Graph the function over one full period. Label all maxima, minima, and x-intercepts.

(a) $f(x) = 4\sin(2x - \pi)$

amplitude =

period=

phase shift=

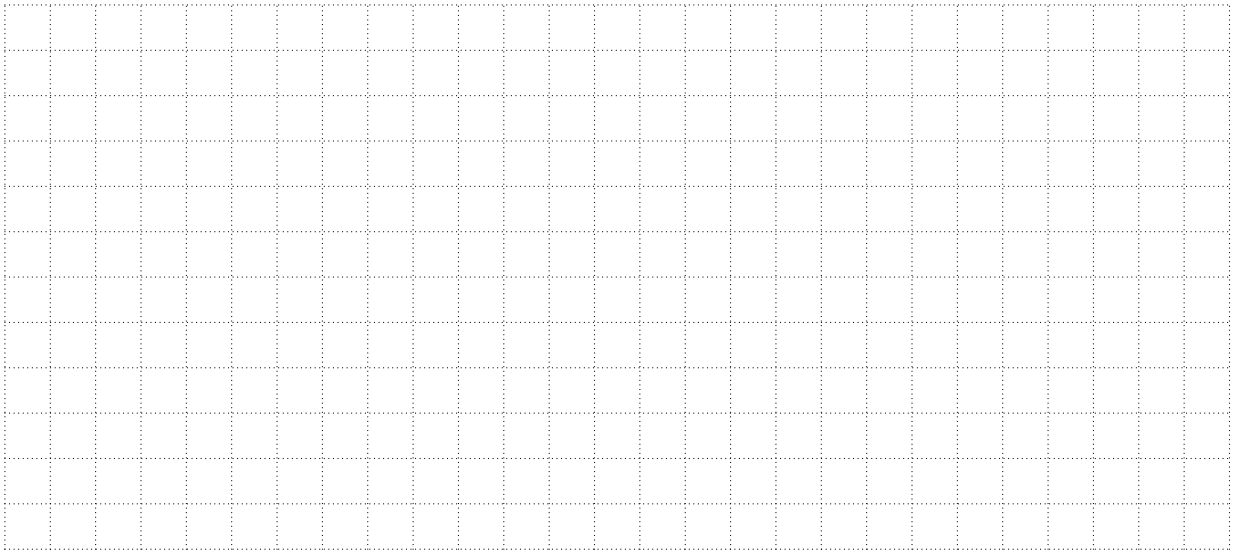


(b) $f(x) = 5\cos(4x + 3\pi)$

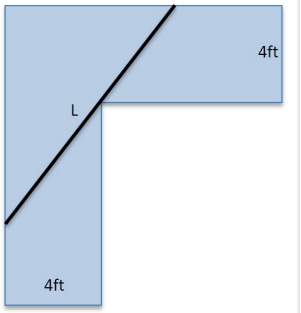
amplitude =

period=

phase shift=



Exercise 3. Suppose there is a hallway with a turn (see the figure below). The hallway is 4ft wide. In this module, we will try to figure out the longest pipe we can move through the turn. For simplicity's sake we will assume the pipe is very narrow, rigid, and that it must be kept horizontal.



The pipe makes an angle with each of the two walls. Label one them θ.

(1) Represent L as a function of θ. (Hint: break L into two parts, and represent each part using 4ft and an appropriate trigonometric function of the angle).

(2) Use the graph of L as a function of θ to find the length of the longest pipe that can be moved through the hallway. (Hint: Think about which point on the graph will be of interest).