# MAT 101 Calculus I
Homework 4

## Basic Information

This assignment is due on Gradescope by **1:30 PM on Tuesday, September 17**.

Make sure you understand MHC honor code and have carefully read and understood the additional information on the class syllabus. I am happy to discuss any questions or concerns you have!

A major component of this class is helping you understand *why* the mathematics you use works the way it does. To that end, make sure you show all your work as you will be graded on the *process* you use, not just your final answer. And if a question asks you to explain why something is true, be sure to answer that part of the question in complete sentences. Remember, answers without any work will receive 0 points.

The homework problems will be graded anonymously so please do not put your name or other identifying information on the pages.

## Turn-In Problems

1.3: 8, 46 (Explain your answer briefly in #46)
1.4: 12, 18
1.6: 8, 14. (You can use Desmos for these two problems)

7. Unit Circle Problem (only use a unit circle, do not use your calculator)

(a) What is $\sin\left(\frac{3\pi}{4}\right)$?

(b) What value(s) of $\theta$ satisfy $\cos\theta = \frac{1}{2}$?

8. Use Desmos or another graphing program to graph the function $f(x) = \cos(x) - \sin(x)$. On the region from $x = 0$ to $x = 2\pi$, the graph has two $x$-intercepts, where $f(x) = 0$. Use the Unit Circle to help you figure out what those two $x$-intercepts are, and say why algebraically those are the right points.

## Additional Problems (to do on your own, not to turn in)

1.3: 9, 45
1.4: 11, 17
1.6: 7, 15