

# MAT 101 Calculus I

## Homework 4

---

### Basic Information

This assignment is due on Gradescope by **3:00 PM on Tuesday, February 10.**

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: 46 (Explain your answer briefly in #46)

1.4: 12, 16

4. Solve for  $x$  in the equation  $\ln(\ln x) = 2$ .

5. 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  $\cos \theta = \frac{1}{2}$ ?

6. 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: 45

1.4: 11, 13, 15