LARSON—MATH 255–HOMEWORK WORKSHEET h04
Lists, Calculus, Matrices

1. Create a Cocalc/Sage Cloud account.

   (a) Start the Chrome browser.

   (b) Go to `http://cocalc.com`

   (c) You should see an existing Project for our class. Click on that.

   (d) Click "New", then "Sage Worksheet", then call it **h04**.

   (e) For each problem number, label it in theSAGE cell where the work is. So for Problem 1, the first line of the cell should be `#Problem 1`.

2. Let `L=[100..200]`. Now use `is_prime` and list comprehension to filter the primes from list L (that is, to find a list of the primes from 100 to 200.

3. Start with an empty list `primes` and use a *for loop* to build up a list of primes from 100 to 200.

4. Find out **how many** primes there are from 100 to 200. Explain how you found your answer.

5. How many primes are there from 1000 to 2000?

6. Consider the system: $\begin{cases} 9a+3b+1c=32 \\ 4a+2b+1c=15 \\ 1a+1b+1c=6 \end{cases}$ Find a matrix that represents this system, find the row-reduced echelon form of this matrix, rewrite this as an equivalent system of linear equations and interpret.

7. Write a for loop to print the squares of the integers from 15 to 19.

8. Define a function `is_multiple_of_5(n)` that returns `True` if the input number n is a multiple of 5 and `False` if it is not.

9. Use you last function to define a function `count_multiples_of_5(L)` that **returns a count** of all the multiples of 5 in an input list L. Test it to make sure it works.

10. What is the smallest positive number that is evenly divisible by all of the numbers from 10 to 20.

Getting your classwork recorded

When you are done, before you leave class...

(a) Click the "Make pdf" (Adobe symbol) icon and make a pdf of this worksheet. (If CoCalc hangs, click the printer icon, then "Open", then print or make a pdf using your browser).

(b) Send me an email with an informative header like "Math 255 - h04 worksheet attached" (so that it will be properly recorded).

(c) Remember to attach today's classroom worksheet!