Last name _____

First name _____

LARSON—MATH 310–CLASSROOM WORKSHEET 10
The Vec Class.

1. Set up your CoCalc JUPYTER notebook for today's work.

   (a) Start the Chrome browser.

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

   (c) Log in.

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

   (e) Make sure you are in your Home directory (if you work in your Handouts directory, your work could get overwritten).

   (f) Click "New", then "Jupyter Notebook", then call it **310-c10**.

   (g) Make sure you have PYTHON as the *kernel*.

2. **Klein's Vec() class**

```
class Vec:
    def __init__(self, labels, function):
        self.D = labels
        self.f = function

```

3. Once Python has processed this definition, you can create an instance of Vec as follows. Code and run.

```
Vec({'A','B','C'}, {'A':1})
```

4. (**Quiz 2.7.1**) Write a procedure `zero_vec(D)` with the following spec:
   • input: a set D
   • output: an instance of Vec representing a D-vector all of whose entries have value zero.

5. Look in the Handouts folder for the *vec.py* file and the *class* definition of the vector class `Vec`.

   In order to add vectors, multiply them by scalars, etc, there are lots of details missing. Our goal for the day is to discuss what's missing and fill in the details.

As Klein has designed his `Vec` class to promote *sparsity* (not requiring a dictionary value for every element in the vector's domain), we will have to hack out some details so that this works seamlessly.

6. Look at the docstring for `getitem` procedure. Let's make that work, and test it.

7. Look at the docstring for `setitem` procedure. Let's make that work, and test it.

8. Look at the docstring for the `add` procedure. Let's make that work, and test it.

9. Look at the docstring for the `scalar_mul` procedure. Let's make that work, and test it.

10. Look at the docstring for the `dot` procedure. Let's make that work, and test it.

11. Look at the docstring for the `neg` procedure. Let's make that work, and test it.

12. What do the *methods* in the `Vec` class do?

Getting your classwork recorded

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

(a) Click the "Print" menu choice (under "File") and make a pdf of this worksheet (html is OK too).

(b) Send me an email (`clarson@vcu.edu`) with an informative header like "Math 310 - c10 worksheet attached" (so that it will be properly recorded).

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