

Math 158-Computer Lab 1

In this lab, we're going to use the program `pplane6.m`, which you can download from the course web site. Open MATLAB and save the file in your working directory. Here's how you get it started: at the MATLAB prompt, type

```
>> pplane6
```

Let's start with some equations you worked with in the Homework from section 1.3.

$$\frac{dy}{dx} = y^{3/5}, \quad \frac{dy}{dx} = y^{4/5}, \quad \frac{dy}{dx} = 2y(3 - y).$$

Sketch solutions through various points using the built in numerical solver.

After I've taken you through these examples, try the following:

1. $\frac{dy}{dx} = |x|y$, $-4 \leq x \leq 4$, $-3 \leq y \leq 3$
2. $\frac{dy}{dx} = -2y \cos(y) - x$, $-2 \leq x \leq 3$, $-3 \leq y \leq 4$
3. $\frac{dy}{dx} = xy^2 - x^2y$, $-2 \leq x \leq 2$, $-2 \leq y \leq 2$
4. $\frac{dy}{dx} = e^x \ln |y|$, $-2 \leq x \leq 2$, $-8 \leq y \leq 8$