Worksheet 1

Worksheet completed with Octave.

Question 1

1. Enter your equations and make them left-aligned

$$f(x) = x^2 \tag{1}$$

$$g(x) = \frac{1}{x} \tag{2}$$

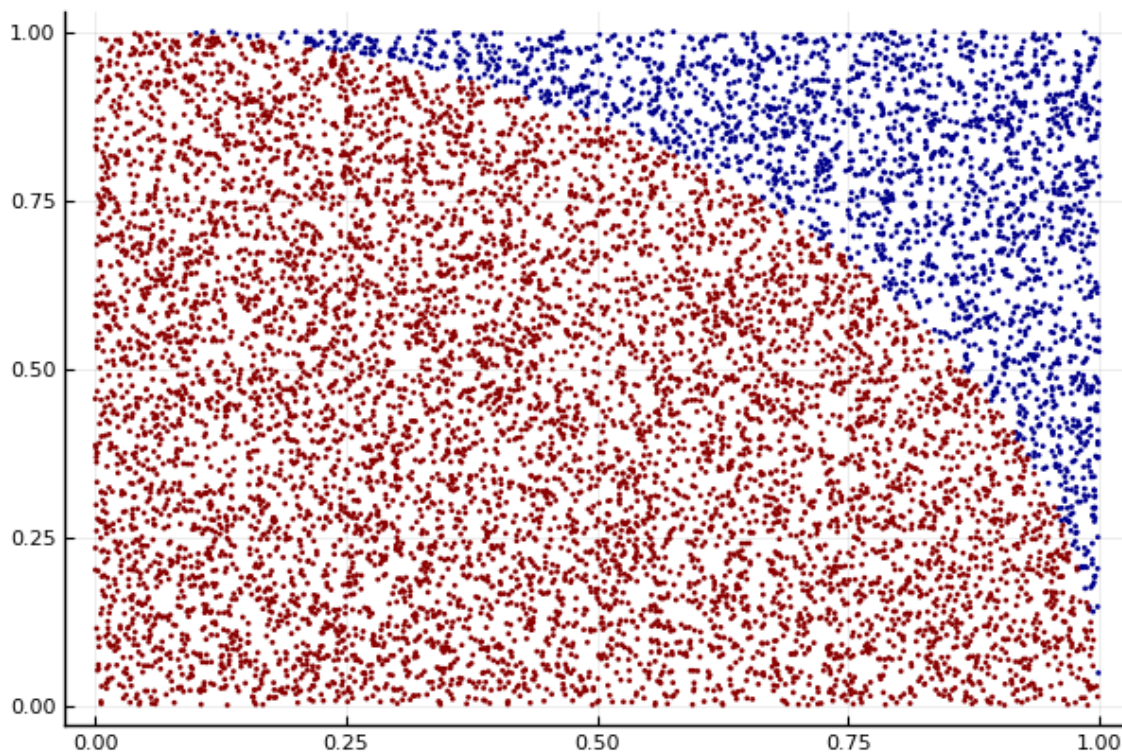$$F(x) = \int_b^a \frac{1}{3} x^3 \tag{3}$$

2. Adding figures is easy!

Figure 1: A goose.

3. To add Matlab code, upload your file and include it here:

Listing 1: My Matlab script!

```
1  #### Simulation Exercise 1 ####
2
```

```
3   using  Plots;  pyplot()
4
5   # x^2 + y^2 <= r^2
6   function  calculate_pi(N = 1000)
7        S = 0
8        x,  y = rand(N),  rand(N)
9        c     = zeros(N)
10       for  i  in  1:N
11            if  x[i]^2+y[i]^2 <= 1
12                 S+=1
13                 c[i] = 1
14           end
15       end
16       ÏĂ = 4*S/N
17       return  ÏĂ,x,y,c
18   end
19
20   N = [100,1_000,10_000,100_000]
21   v,x,y,c = calculate_pi(10_000)
22
23   p = scatter(x,y,zcolor=c,markersize=2,markerstrokewidth = 0,c=:
         bluesreds,fmt =:png,legend=false)
```

4. A console output:

```
Use a Verbatim section to show console output.
All tabs and spaces are shown exactly the way you enter
them with monospaced font!
```

Question 2

1. Equations from parts 1 and 2

   (a) Write the equation of the surface in the form $z = f(x, y)$.

   $$f(x) = (x + a)(x + b) \tag{1}$$

   $$L' = L\sqrt{1 - \frac{v^2}{c^2}} \tag{2}$$

   $$\lim_{x \to 0} \frac{e^x - 1}{2x} \tag{3}$$

   $$\frac{\left[\begin{smallmatrix} 0 \\ 0 \end{smallmatrix}\right]}{H} \tag{4}$$

   $$\lim_{x \to 0} \frac{e^x}{2} = \frac{1}{2} \tag{5}$$

   (b) Make inline math with dollar dollar y'all *woo*! Also centered equations. Tell LaTeX where you want to align equations with &.

   $$f(x) = x^2$$
   $$g(x) = \frac{1}{x}$$
   $$F(x) = \int_b^a \frac{1}{3} x^3$$

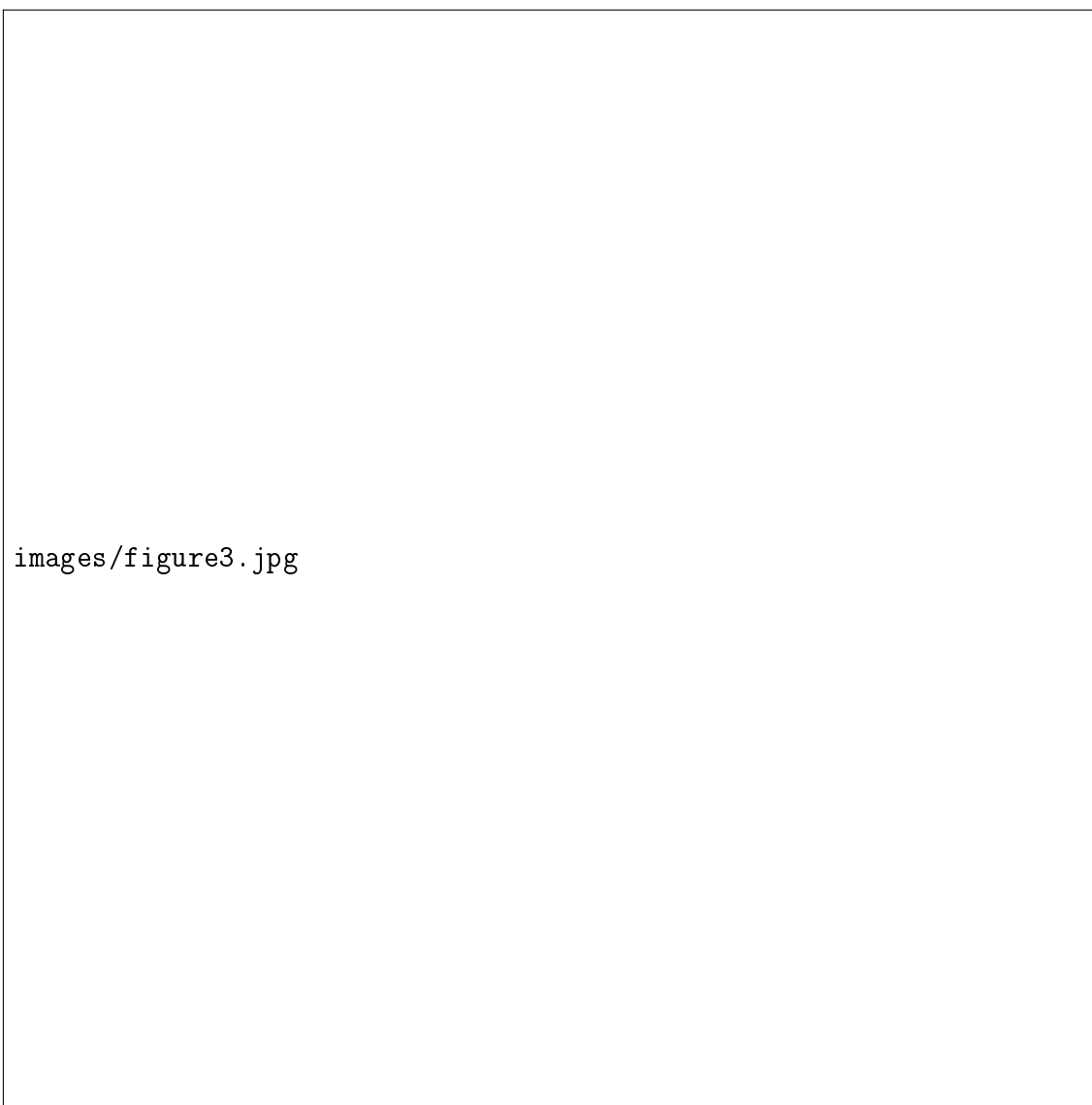**Worksheet 1**

2. Plots for Part 3

    (a) Good times.

images/figure3.jpg

Figure 2: A meme.