

Written Assignment 1

Due Wednesday, June 29th

1. (My Brain) Consider the equation

$$x + y^2 = 1$$

where x, y are real numbers.

- (a) Does this equation define y as a function of x ? Explain.
- (b) Does this equation define x as a function of y ? Explain.

2. (Ch. 1 #15-16, 20) Let

$$f(x) = \begin{cases} 6 + x^2 & \text{if } x < 2 \\ |x - 5| & \text{if } x \geq 2. \end{cases}$$

- (a) Compute $f(-2)$.
 - (b) Compute $f(1)$.
 - (c) For what values of x is $f(x) = 3$?
 - (d) For what values of x is $f(x) = 15$?
3. (Ch. 1 #109) The rate of growth in a population is proportional to the size of the population at any given time. The rate of growth is 500 people per year when there are 12,000 people in the population. Find an equation that models this description, and be sure to define any variables you use.
4. (My brain) The ideal gas law from chemistry states that the product of Pressure and Volume of a cloud of some type of gas is proportional to the temperature of the gas. When the pressure is 1kPa (kilopascal, a unit of pressure) and the volume is 30 liters, the temperature is 300°C. Use this information to find out the temperature of the gas when the pressure increases to 20kPa and the volume decreases to 25 liters.