Worksheet # 2 **Name:** _____
Date: 30/08/2021
Math 1A: Fall 2021

Problem 1

Classify each function as a power function, root function, polynomial (state its degree), rational function, algebraic function, trigonometric function, exponential function, or logarithmic function.

1. $f(x) = \log_2 x$

2. $g(x) = \sqrt[4]{x}$

3. $h(x) = \frac{2x^3}{1-x^2}$

4. $u(t) = 1 - 1.1t + 2.54t^2$

5. $v(t) = 5^t$

6. $w(\theta) = \sin\theta \cos^2\theta$

Problem 2

Find the domain of the function.

1. $f(x) = \frac{\cos(x)}{1-\sin(x)}$.

2. $g(x) = \frac{1}{1-\tan(x)}$.

Problem 3

Many physical quantities are connected by *inverse square laws*, that is, by power functions of the form $f(x) = kx^{-2}$. In particular, the illumination of an object by a light source is inversely proportional to the square of the distance from the source. Suppose that after dark you are in a room with just one lamp and you are trying to read a book. The light is too dim and so you move halfway to the lamp. How much brighter is the light?

Problem 4

1. Find an equation for a family of linear functions with slope 2 and sketch several members of the family.

2. Find an equation for the family of linear functions such that $f(2) = 1$ and sketch several members of the family.

3. Which function belongs to both families?

Problem 5

Find an expression for a cubic function f if $f(1) = 6$ and $f(-1) = f(0) = f(2) = 0$.