

Name: _____

MATH 101

Fall 2023

HW 8: Due 10/30

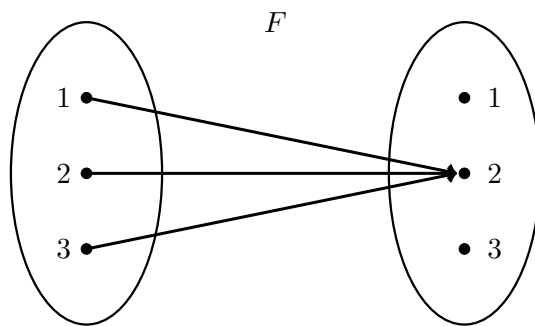
*“The beauty of mathematics only shows
itself to more patient followers.”*

–Maryam Mirzakhani

Problem 1. (10pt) For each of the following, describe whether the given dependent variable is a function of the independent variable:

- (a) Independent: Number of stains removed by a test detergent. Dependent: Type of detergent used.
- (b) Independent: Time since the song began. Dependent: Number of words spoken in the song.
- (c) Independent: Phase of the moon. Dependent: Day of the week.
- (d) Independent: Number of days since an account was opened. Dependent: Amount of money in the account.

Problem 2. (10pt) Determine whether the relations F and G shown below are functions. Be sure to fully justify your answer.



x	G
1	0
2	2
3	4
4	7
5	0

Problem 3. (10pt) Determine whether the relations $f(x) = 3x^2 - 4x + 5$ and $g(x, y) = xy^2 - x^2y$ are functions. Be sure to fully justify your answer. Also, find $f(-1)$ and $g(3, -1)$.