Homework 11

Relations, Functions, Domain, and Range

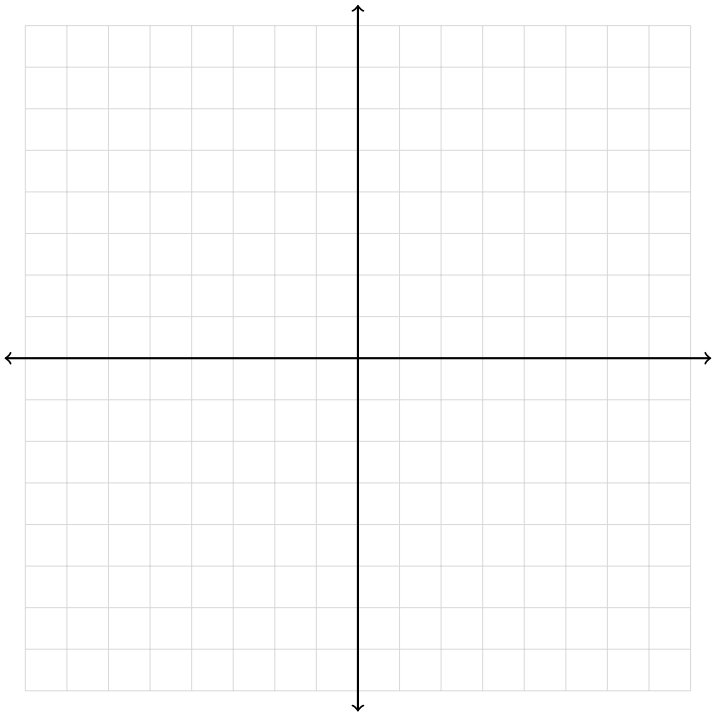
Name: _____

Show all work clearly. Use proper mathematical notation when writing domains and ranges.

Part I: Coordinate Plane Review

1. Plot the points and answer the questions below.

$$A(-5, 4), \quad B(6, -2), \quad C(2, 3), \quad D(-4, -5)$$



(a) Identify the domain.

(b) Identify the range.

Part II: Relations and Functions

2. Express the relation as a table and determine whether it represents a function.

$$\{(3,2),(-1,4),(0,-3),(-3,4),(-2,-2)\}$$

Find the domain and the range.

3. Determine whether the relation represented by the table is a function.

x	y
-2	5
1	4
3	-1
1	8

Find the domain and range.

4. Determine whether the mapping diagram represents a function.

$$-2 \longrightarrow 5$$

$$1 \longrightarrow 3$$

$$4 \longrightarrow -1$$

Find the domain and range.

5. Determine whether the equation represents a function.

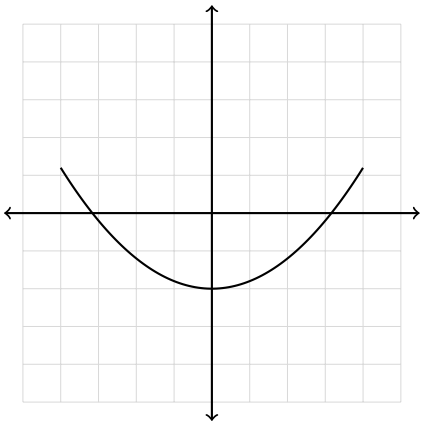
$$x^2 + y^2 = 16$$

Explain your reasoning.

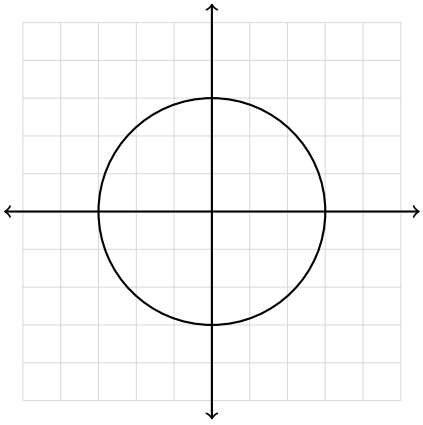
Part III: Vertical Line Test

Use the vertical line test to determine whether each graph represents a function.

(a)

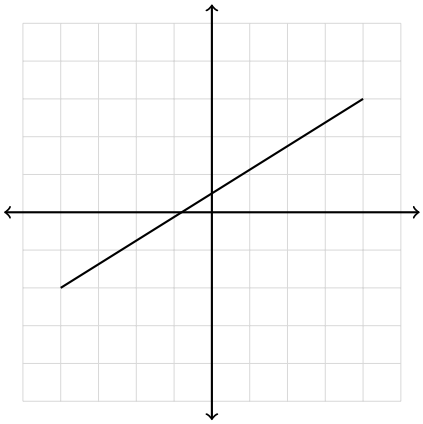


Function? _____



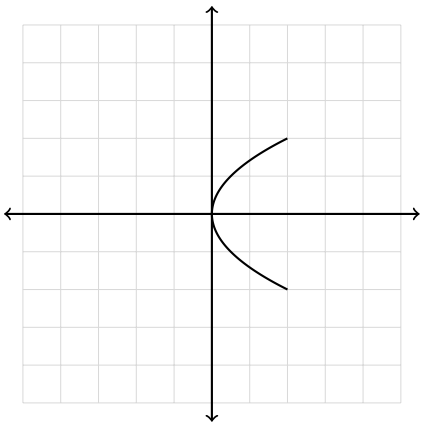
(b)

Function? _____



(c)

Function? _____

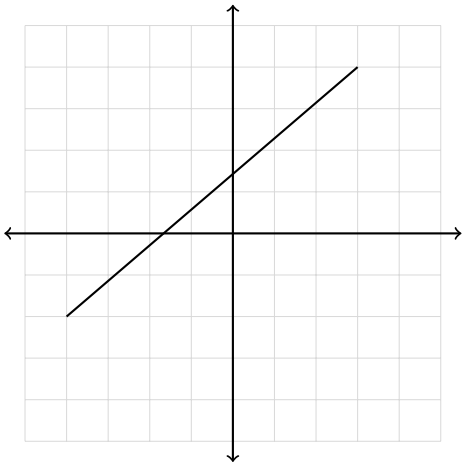


(d)

Function? _____

Part IV: Domain and Range from Graphs

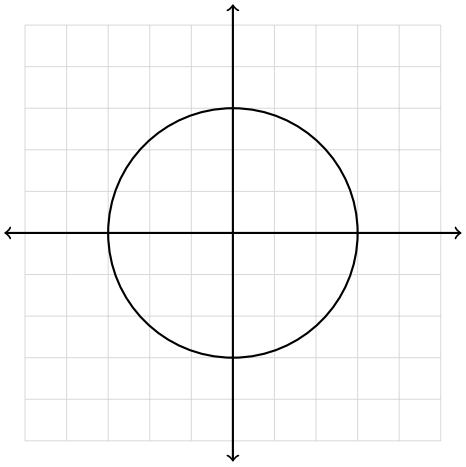
(e) Determine the domain and range of the graph.



Domain:

Range:

(f) Determine the domain and range of the graph.



Domain:

Range:

Part V: Function Notation

Use

$$f(x) = 2x - 3$$

and

$$g(x) = 4x - 1$$

to evaluate each expression.

i. $f(-3)$

ii. $g(-7)$

iii. $f(5 + 8)$

iv. $f(3c)$

v. $g(w - 7)$

Part VI: Applications

i. The function

$$g(x) = 160 + 1.5x$$

models the weight of a basketball player after x weeks of training.

A. Find $g(6)$.

B. Explain the meaning of your answer in words.

ii. A taxi company charges a \$4 starting fee plus \$3 per mile traveled.

A. Write a function $C(m)$ representing the total cost after m miles.

B. Find $C(10)$.

C. Explain what the value means.