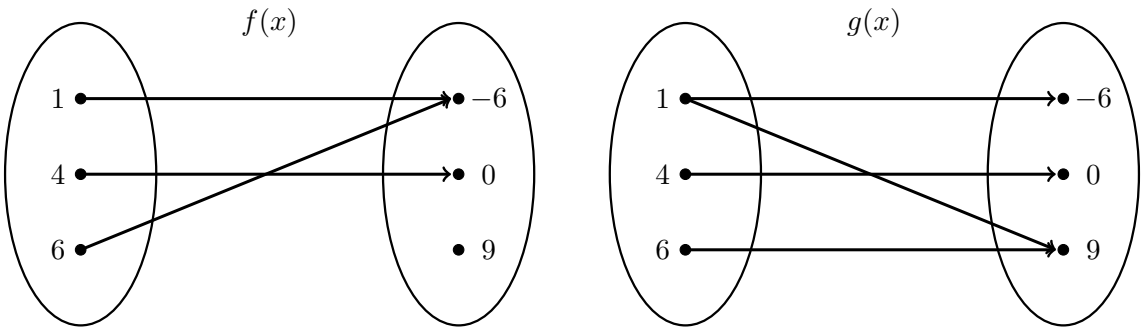
Name: _____

MATH 101
Fall 2021
HW 5: Due 10/05

"The economy stinks, bees are dying, and movies are pretty much all sequels now."

–Winston Saint-Marie Schmidt, New Girl

Problem 1. (10pt) Determine if the relations $f(x)$ and $g(x)$ shown below are functions. Explain why or why not.



Problem 2. (10pt) Determine if the relations $f(x)$ and $g(x)$ shown below are functions. Explain why or why not.

x	$f(x)$
1	8
2	-7
3	8
4	8
5	10

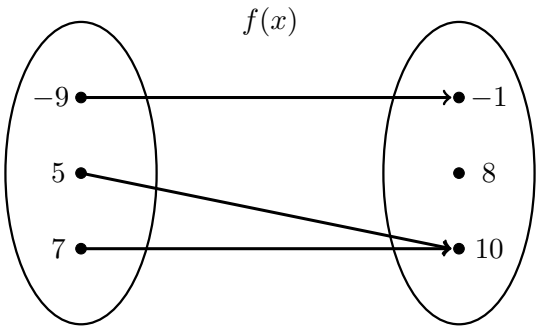
x	$g(x)$
5	2
6	π
8	1.87
9	-9
5	3

Problem 3. (10pt) Determine if the relations $f(x)$ and $g(x)$ shown below are functions. Explain why or why not.

$$f(x) = 2.54x + 91$$

$$g(x) = x^3 - x + 1$$

Problem 4. (10pt) Suppose $f(x)$ is the function given below.



(a) What is the domain of $f(x)$?

(b) What is the codomain of $f(x)$?

(c) What is the range of $f(x)$?

Problem 5. (10pt) Suppose $f(x)$ and $g(x)$ are the functions given below.

x	-2	0	1	3	4	5	10
$f(x)$	5	-3.1	π	5	$3/2$	14	0
$g(x)$	6	4	6.6	-15	4	9	2

Compute the following:

(a) $f(1) =$

(b) $g(0) =$

(c) $(f+g)(5) =$

(d) $(f-g)(-2) =$

(e) $(6f)(1) =$

(f) $\left(\dfrac{f}{g}\right)(10) =$

(g) $f(4)\,g(5) =$

(h) $f(2-g(0)) =$

(i) $(f \circ g)(0) =$

(j) $(g \circ f)(3) =$

Problem 6. (10pt) Suppose $f(x)$ and $g(x)$ are the functions given below.

$$f(x) = 3x - 1$$

$$g(x) = x^2 + x + 1$$

Compute the following:

(a) $f(1) =$

(b) $g(0) =$

(c) $f(1) - 2g(1) =$

(d) $f(x) - g(x) =$

(e) $f(x)\, g(x) =$

(f) $\left(\dfrac{f}{g}\right)(x) =$

(g) $(g \circ f)(1) =$

(h) $f(g(0)) =$

(i) $(f \circ g)(x) =$

(j) $(g \circ f)(x) =$