Name: _____

MATH 101
Fall 2022
HW 8: Due 10/17

"I hate Algebra."
–John H. Conway

Problem 1. (10pt) Determine whether the point $(-6, -2)$ is on the graph of $f(x) = 8 - \frac{5}{3}\,x$. Determine also whether the point $(12, -12)$ is on the graph of $f(x)$. For each, explain why or why not.

Problem 2. (10pt) Suppose $f(x)$ and $g(x)$ are the functions given below.

x	-3	-2	-1	0	1	2	3
$f(x)$	4	2	0	-5	1	2	4
$g(x)$	2	1	-1	1	-2	3	-3
$h(x)$	-12	4	10	-2	4	-4	0

Compute the following:

(a) $(f+h)(-1) =$

(b) $(h-g)(2) =$

(c) $(5f)(2) =$

(d) $\left(\dfrac{h}{g}\right)(-3) =$

(e) $f(0)\,h(1) =$

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

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

(h) $(g \circ h)(3) =$

(i) $(h \circ g)(3) =$

(j) $(f \circ g \circ h)(0) =$

Problem 3. (10pt) Suppose $f(x)$ and $g(x)$ are the functions given below.

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

$$g(x) = x^2 - 3x + 2$$

Compute the following:

(a) $f(-4) =$

(b) $g(2) =$

(c) $2f(1) - g(3) =$

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

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

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

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

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

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

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

Problem 4. (10pt) Suppose $f(x)$ and $g(x)$ are functions.

(a) Explain what it means for $f(2) = g(2)$ graphically.

(b) Explain what $f(x)$ and $g(x)$ intersecting at the point $(-1, 7)$ means algebraically.