Name: _____

MATH 101
Fall 2022
HW 9: Due 10/24

"You're a good boy, Jeff."
– Catherie Dahmer,
Dahmer - Monster:
The Jeffrey Dahmer Story

Problem 1. (10pt) Let $f(x)$ be a function such that $f^{-1}(x)$ exists. A partial table of values for $f(x)$ is given below:

x	1	2	3	4	5
$f(x)$	5	7	0	9	3

Based on the table above (or your knowledge of functions and inverses), find the following:

(a) $f(3)$

(b) $f^{-1}(3)$

(c) $f(4)$

(d) $f^{-1}(9)$

(e) $f(f^{-1}(5))$

(f) $f^{-1}\big(f(2)\big)$

(g) $f^{-1}\big(f(-8)\big)$

(h) $f\big(f^{-1}(10)\big)$

Problem 2. (10pt) Let $f(x) = \frac{1}{4}(x - 3)$. Assume that $f^{-1}(x)$ exists.

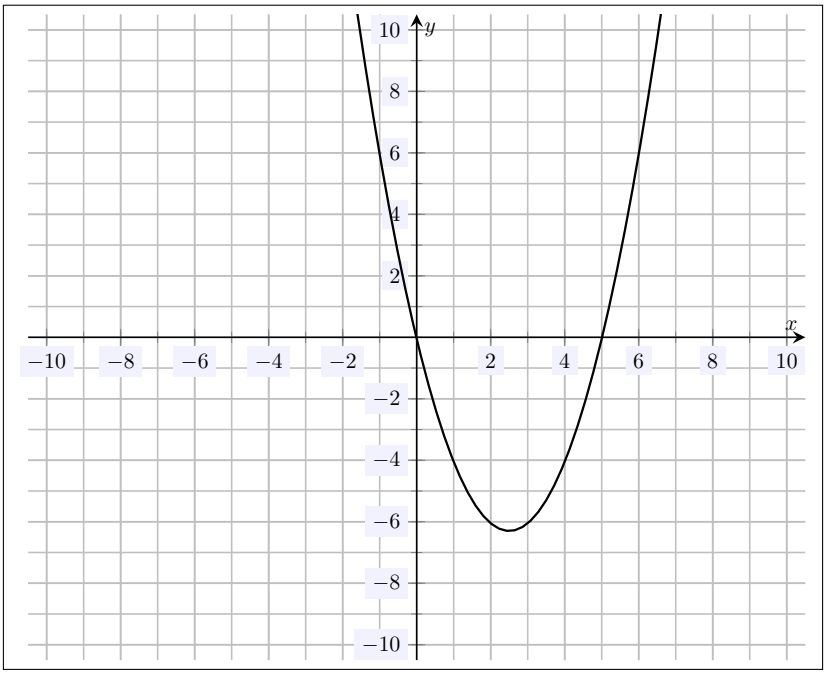
(a) Find $f(15)$.

(b) Use (a) to explain why $f^{-1}(3) = 15$.

(c) Solve the equation given by $f(x) = 11$.

(d) Use (c) to explain why $f^{-1}(11) = 47$.

Problem 3. (10pt) A graph of a relation $f(x)$ is shown below:



Using the graph above, answer the following:

(a) Is the relation $f(x)$ a function? Explain.

(b) Does the relation $f(x)$ have an inverse function? Explain.