Name: _____
MATH 100
Fall 2023
HW 7: Due 10/02

"This is the worst kind of discrimination — the kind against me!"
–Bender Bending Rodríguez, Futurama

Problem 1. (10pt) Consider the function given by $W(t) = 568.1 - 13.4t$.

(a) Is $W(t)$ a linear function? Explain.

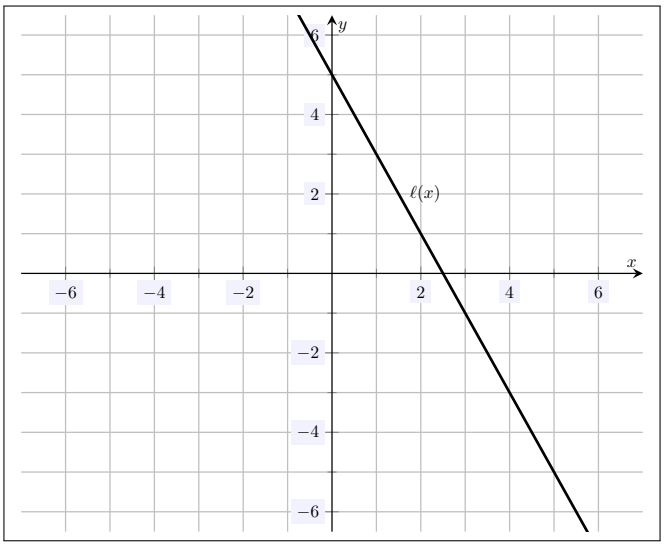
(b) Find the slope of $W(t)$.

(c) Find the y-intercept of $W(t)$.

(d) Find the x-intercept of $W(t)$.

(e) Find a value of t for which $W(t) = 100$.

Problem 2. (10pt) Consider the relation plotted below.



(a) Is $\ell(x)$ a linear function? Explain.

(b) Find the equation for $\ell(x)$.

(c) Find the x and y-intercepts for $\ell(x)$.

(d) Find a value of x for which $\ell(x) = -3$.

Problem 3. (10pt) Consider the linear function that goes through the points $(-4, 5)$ and $(6, 0)$.

(a) Find the slope of this linear function.

(b) Find the equation of this linear function.

Problem 4. (10pt) A certain product requires \$800 of upfront costs to produce—the *fixed costs*. After this investment, it costs \$8.50 produce every item.

(a) Explain why the cost to produce q items, $C(q)$, is a linear function.

(b) Find the equation for $C(q)$.

(c) What does the y-intercept for $C(q)$ represent?

(d) How much does it cost to produce 10,000 items?

(e) What is the maximum number of items you could produce with \$6,000?