Name: _____
MATH 101
Winter 2021
HW 5: Due 01/11

"I just want to lie on the beach and eat hot dogs. That's all I've ever wanted."
–Kevin Malone, The Office

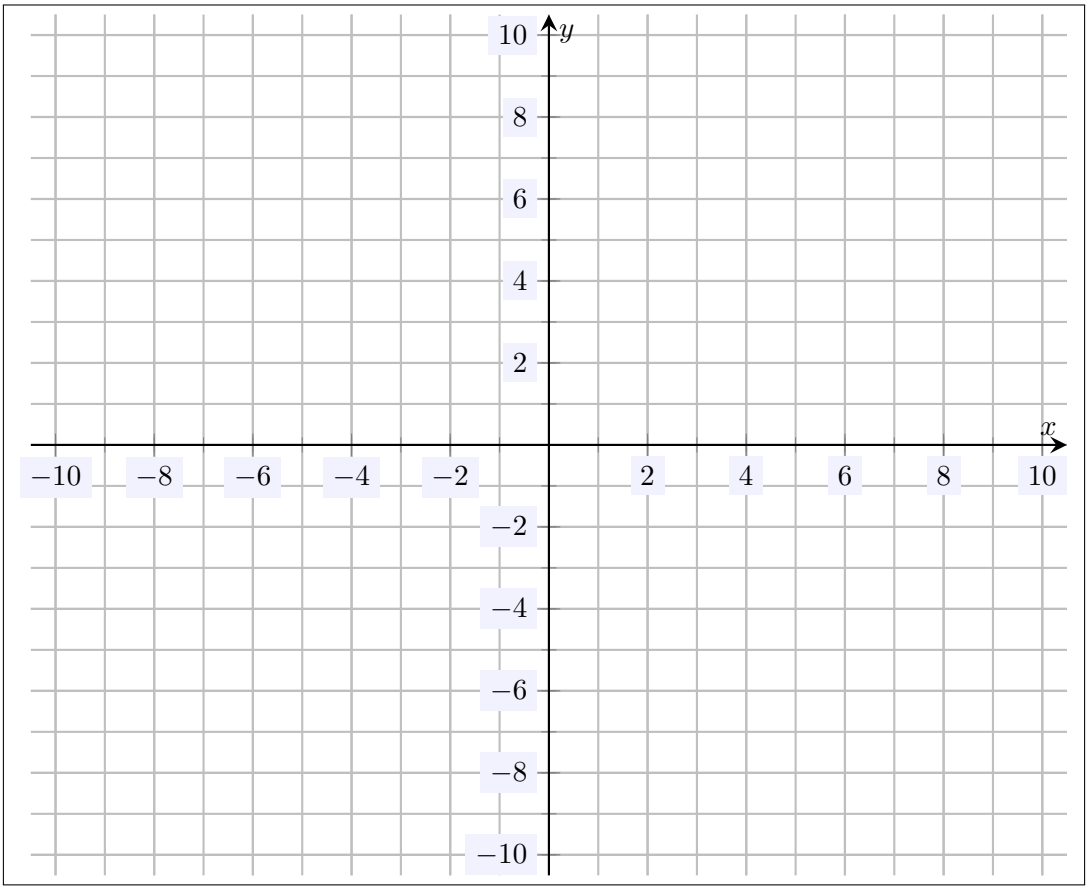
Problem 1. (10pt) Determine if the following function is linear. Explain why or why not.

x	$f(x)$
1.2	7.16
2.8	12.39
4.4	16.12
6.0	22.13
7.6	25.08

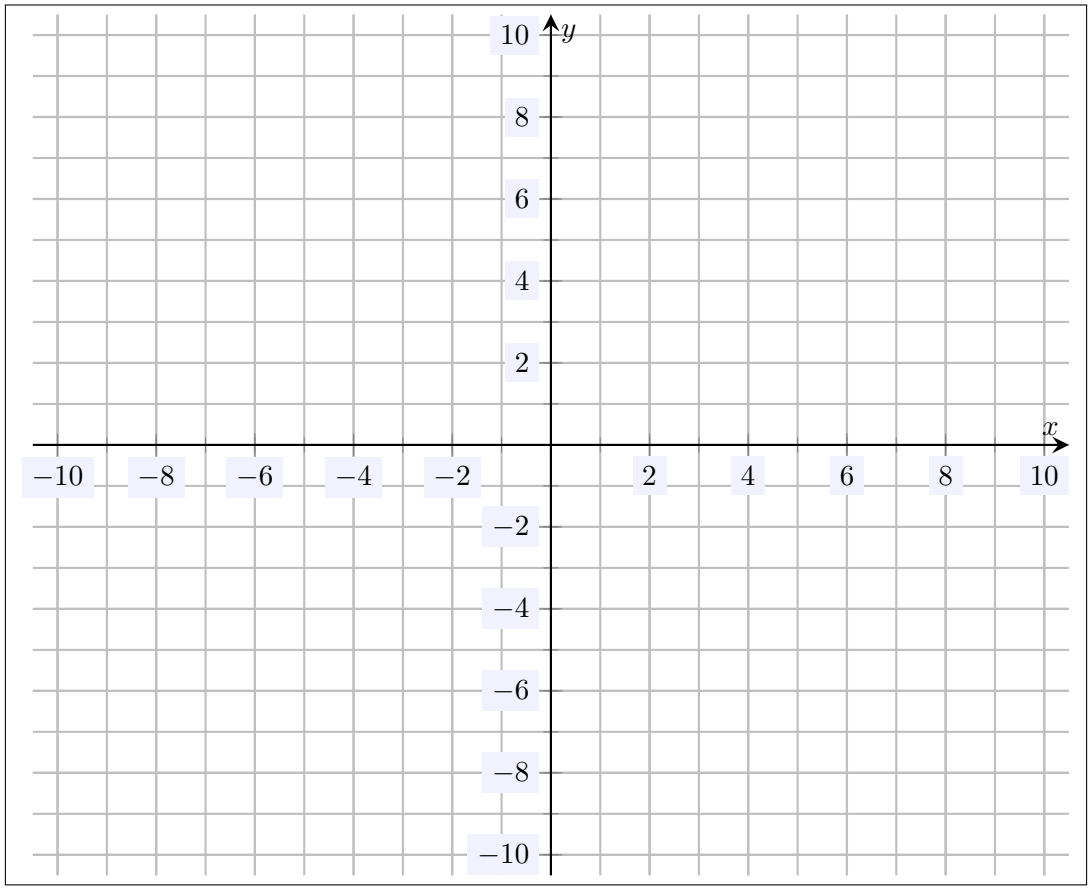
Problem 2. (10pt) A linear function has a table whose values are given below. Find the equation of the linear function. Be sure to specify the slope and y-intercept.

x	$f(x)$
2	20
7	-5
12	-30
17	-55

Problem 3. (10pt) Plot the linear function $y = \frac{3}{2}x - 4$ using the "two-point" method.



Problem 4. (10pt) Plot the linear function $y = -\frac{1}{2}x + 3$ using the "slope" method.



Problem 5. (10pt) Suppose water is draining from a tank. The number of gallons of water in the tank t hours from now is given by $W(t) = 567.8 - 24.1t$.

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

(b) What is the slope of $W(t)$? Interpret the slope.

(c) Explain how we can know that water is draining from the tank using (b).

(d) What is the y-intercept for $W(t)$? Interpret this intercept.

(e) Sketch a plot of $W(t)$ and estimate when the tank will be completely empty.

Problem 6. (10pt) Consider the linear equation $12x - 2y = 56$.

(a) Solve the linear equation for y.

(b) Determine the slope and y-intercept for the corresponding line.

(c) Interpret the slope in at least two different ways.

Problem 7. (10pt) Consider the linear equation $7.6x + 14.9y = 429.1$.

(a) Solve the linear equation for y.

(b) Determine the slope and y-intercept for the corresponding line.

(c) Interpret the slope in at least two different ways.

Problem 8. (10pt) Consider the line given by $y = -\frac{7}{6}x + 5$.

(a) Put the line in standard form.

(b) Is the point $(-6, 10)$ on the line? Explain.

(c) Is the point $(12, -9)$ on the line? Explain.

Problem 9. (10pt) Find the equation of the line with slope $-\frac{15}{4}$ and y-intercept $(0, -8)$.

Problem 10. (10pt) Find the equation of the line with slope 5 passing through the point $(-3, 10)$.