Math 126 - Spring 2020 - Exam #1

Name: _____

ID# _____

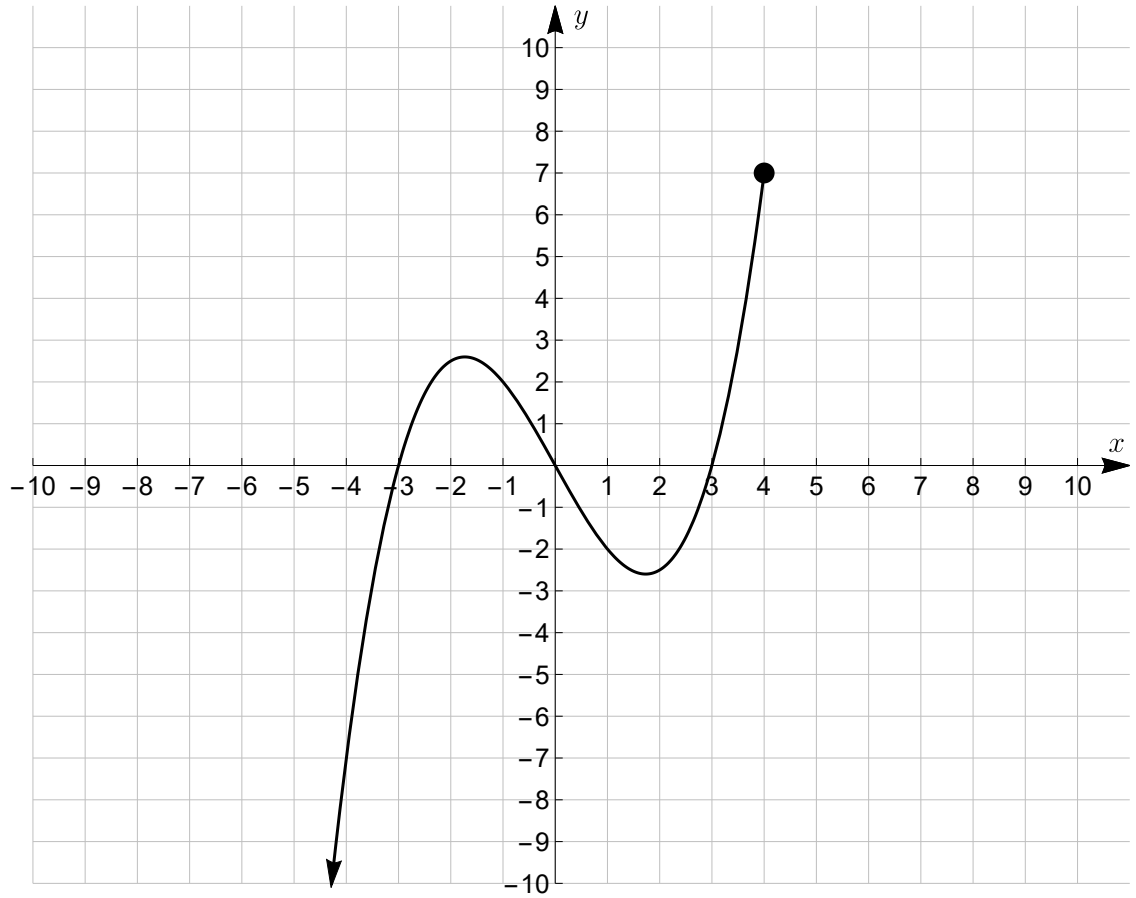
HONOR CODE: On my honor, I have neither given nor received any aid on this examination.

Signature: _____

Instructions: Do all scratch work on the test itself. Make sure your final answers are clearly labeled. There are extra blank graphs at the end of the test, in case you need them. If you do use the extra blank graphs at the end of the test, be sure to (1) indicate on the question that you have more work on the extra blank graphs and (2) label your work on the extra blank graphs so I know what work goes with which question. **SHOW ALL WORK ON THIS EXAM IN ORDER TO RECEIVE FULL CREDIT!!!**

No.	Score
1	/6
2	/13
3	/9
4	/10
5	/10
6	/10
7	/12
8	/8
9	/12
10	/10
Total	/100

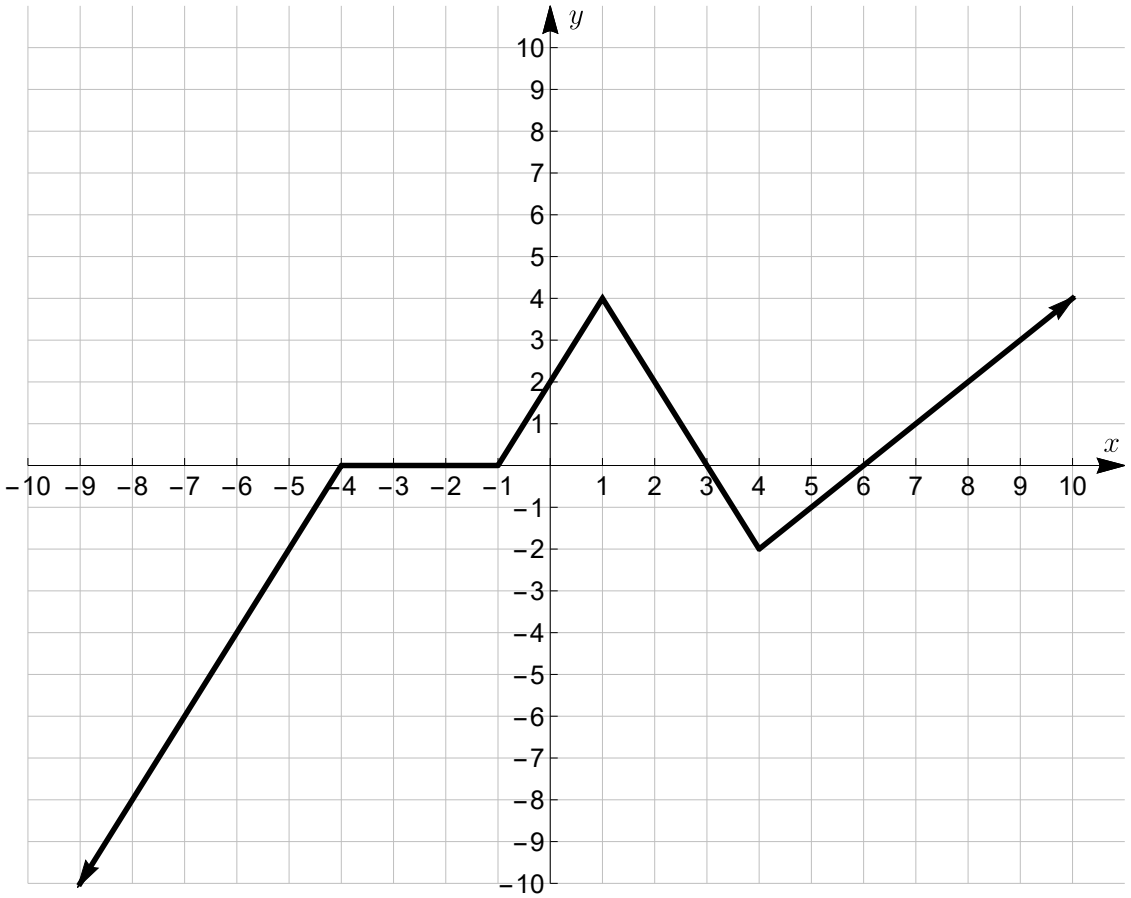
1. Use the following graph to answer parts (a) and (b).



(a) Determine whether or not the relation graphed above represents a function. **Explain your answer!** (2 points)

(b) State the domain and range of the relation graphed above. (4 points)

2. Use the following graph to answer parts (a) - (c).



(a) Find the values of $f(-5)$, $f(1)$, and $f(6)$. (3 points)

(b) State the intervals on which the function is increasing, decreasing, and constant. (6 points)

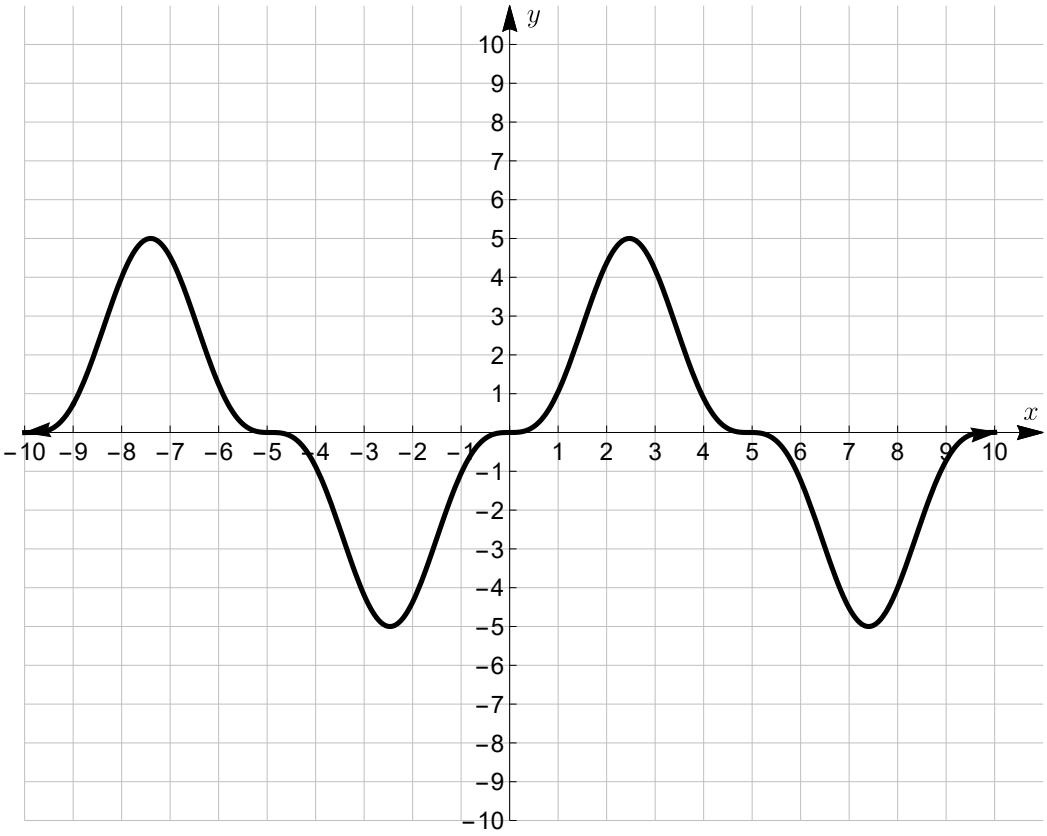
(c) Determine where the local maxima and minima occur and determine what the local maximum and local minimum values are. (4 points)

3. Determine whether each of the following functions is even, odd, or neither. **Explain your answer!** (3 points each)

(a) $f(x) = \frac{x^4}{2x^3 - x}$

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

(c)



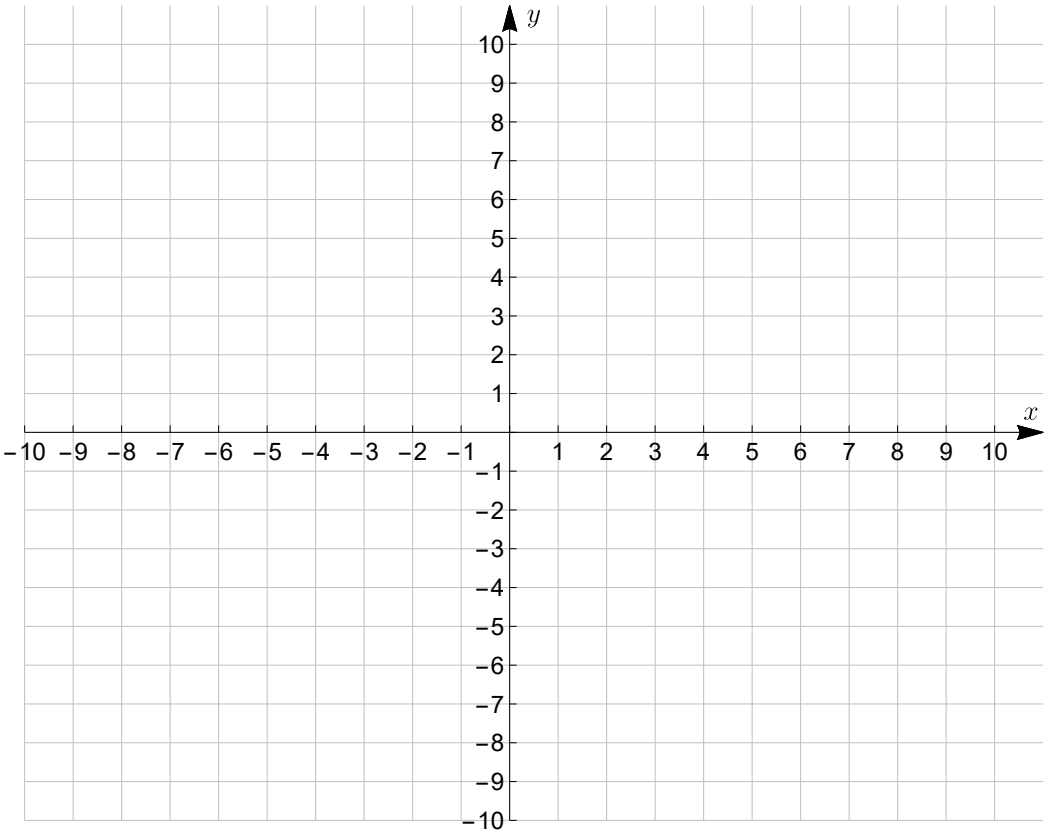
4. Let $f(x)$ be the piecewise defined function

$$f(x) = \begin{cases} \frac{1}{2}x + 2 & \text{if } x < 0 \\ -2 & \text{if } x = 0 \\ x^2 & \text{if } 0 < x \leq 3 \end{cases}$$

(a) Find $f(3)$. (2 points)

(b) Find $f(-2)$. (2 points)

(c) Sketch the graph of $f(x)$. (6 points)

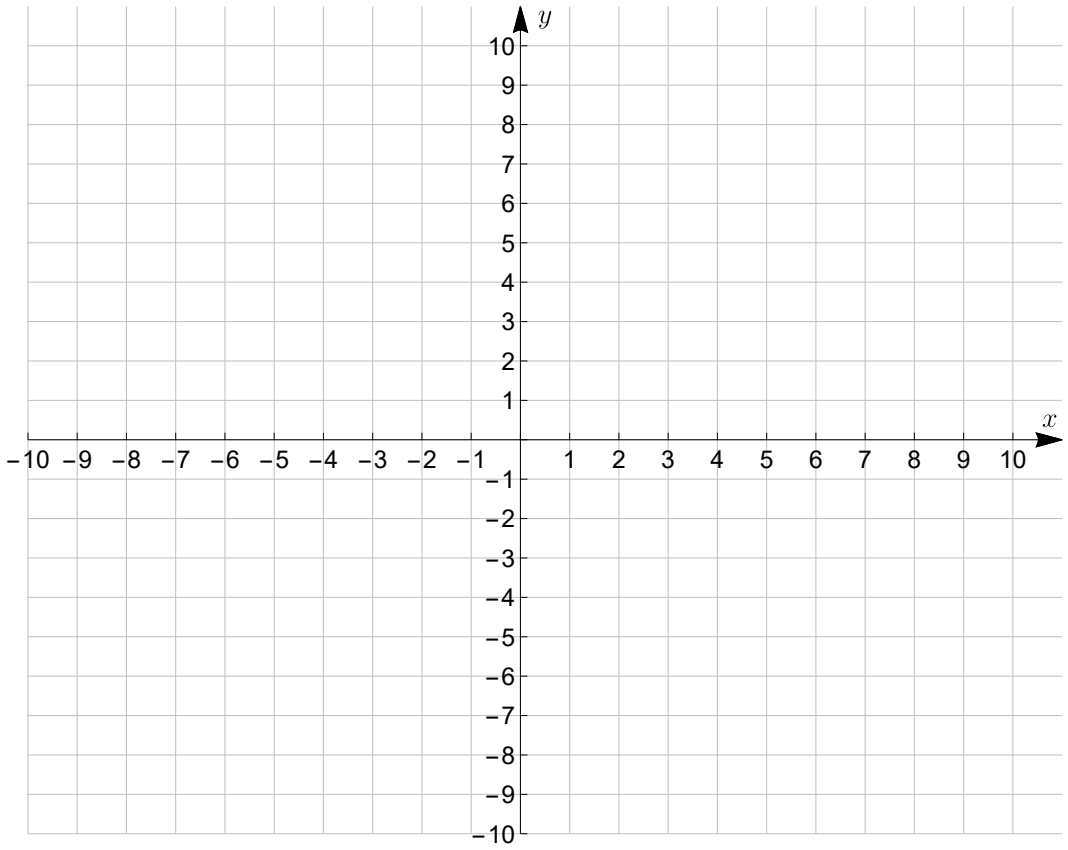


5. Use the following function to answer parts (a) and (b).

$$f(x) = -\sqrt{x+1} - 2$$

(a) State which transformations have been applied, and in which order they have been applied, to the function $g(x) = \sqrt{x}$ to get the function $f(x)$ given above. **Explain how you know.** (4 points)

(b) Graph the function $f(x)$ given above. (6 points)

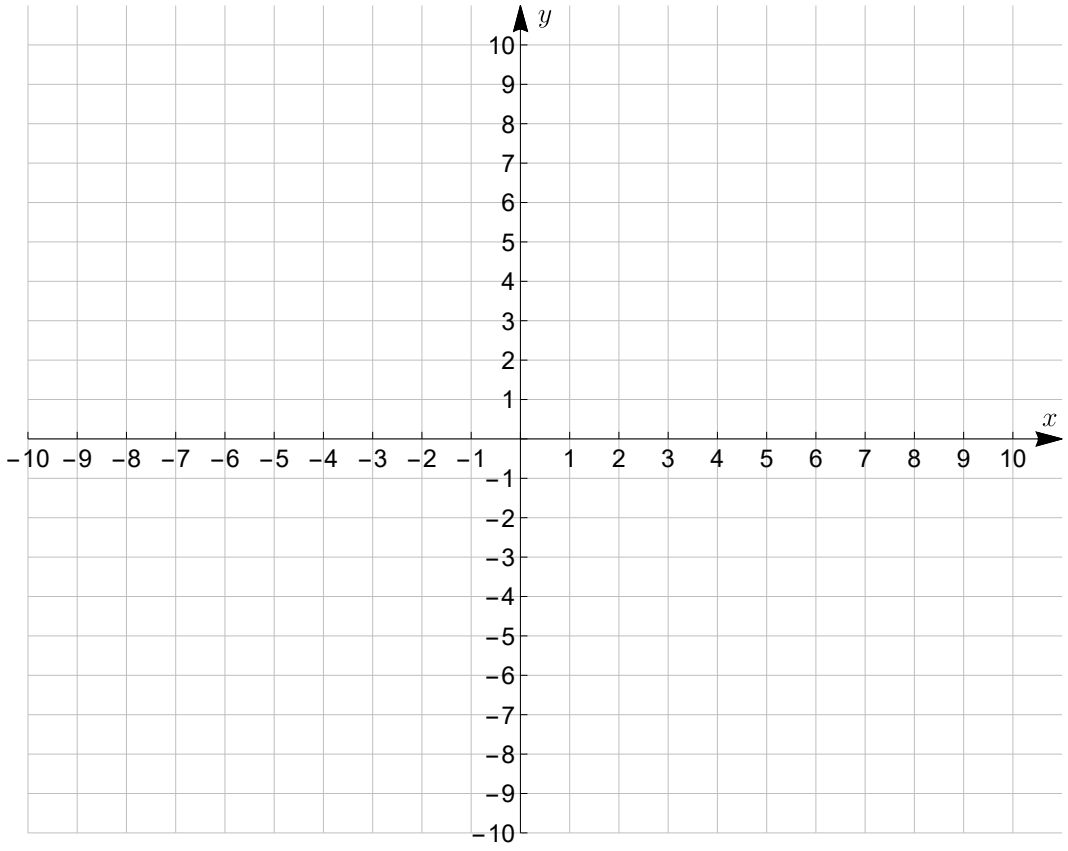


6. Use the following function to answer parts (a) and (b).

$$f(x) = \left|\frac{1}{2}x\right| - 4$$

(a) State which transformations have been applied, and in which order they have been applied, to the function $g(x) = |x|$ to get the function $f(x)$ given above. **Explain how you know.** (4 points)

(b) Graph the function $f(x)$ given above. (6 points)



7. Use the following function to answer parts (a) - (d).

$$f(x) = 2x^2 - x + 5$$

(a) Find $f(3)$. (2 points)

(b) Find $f(-2)$. (2 points)

(c) Find $f(x + h)$. (3 points)

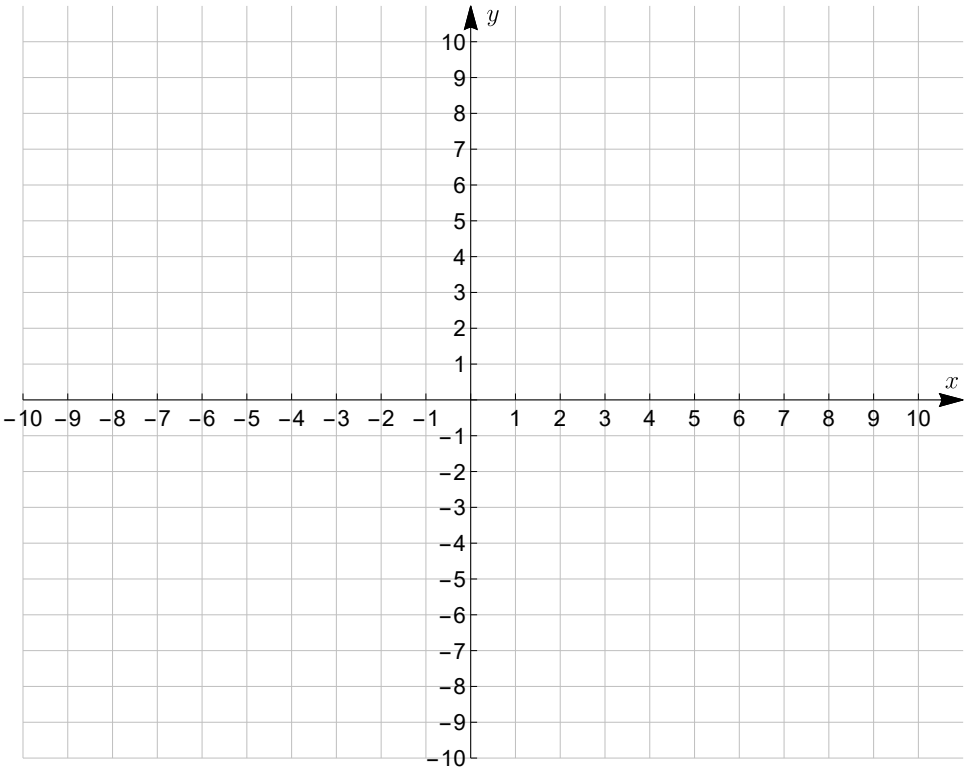
(d) Find the average rate of change of f from $x = -2$ to $x = 3$. (5 points)

8. Find the equation of the line, in slope-intercept form, passing through the following points. (8 points)

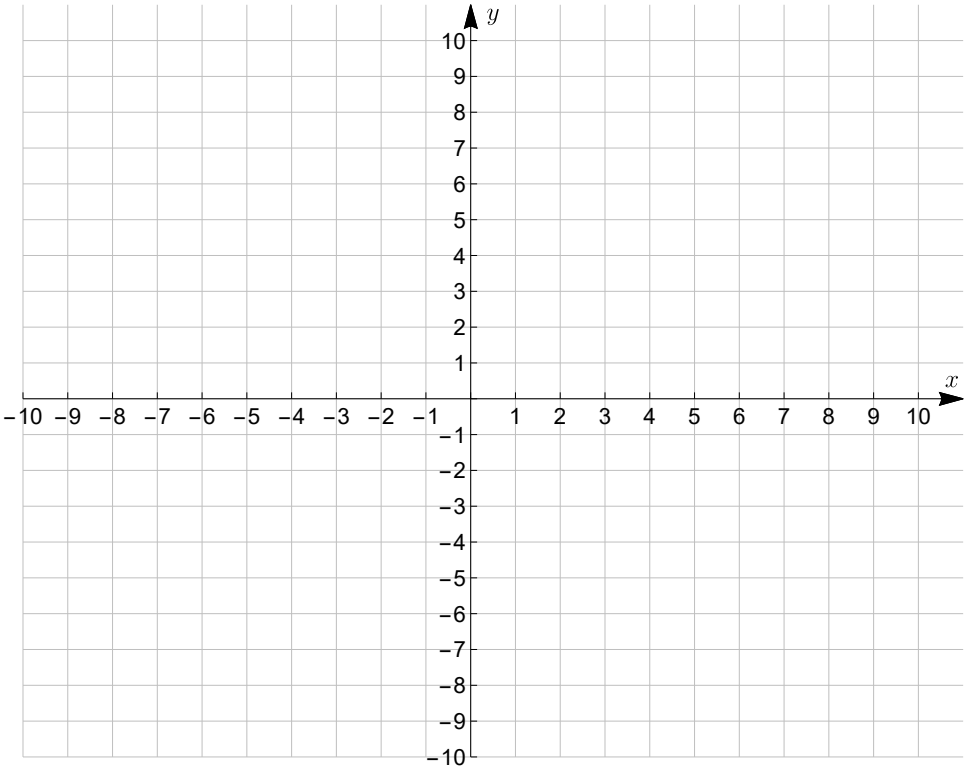
$$(-1, 10) \text{ and } (3, -2)$$

9. Graph each of the following lines. (6 points each)

(a) $y = -\frac{2}{5}x + 1$



(b) $y = 3x - 4$



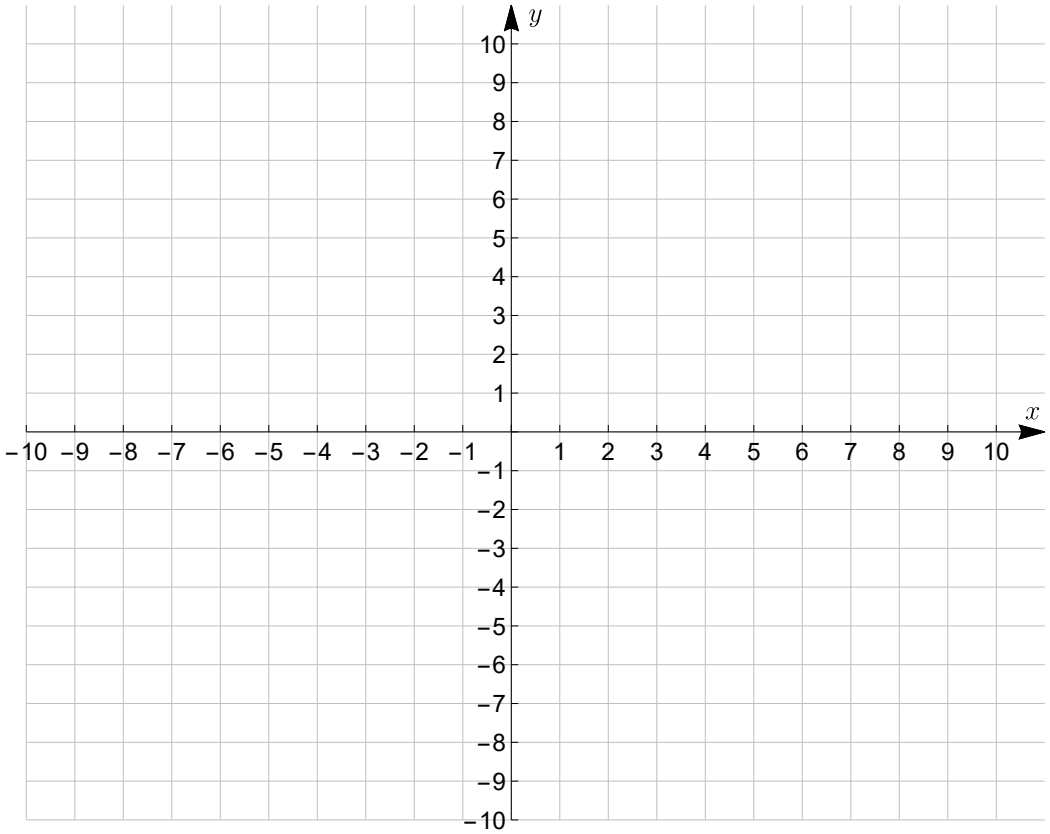
10. Use the following functions to answer parts (a) and (b). (10 points)

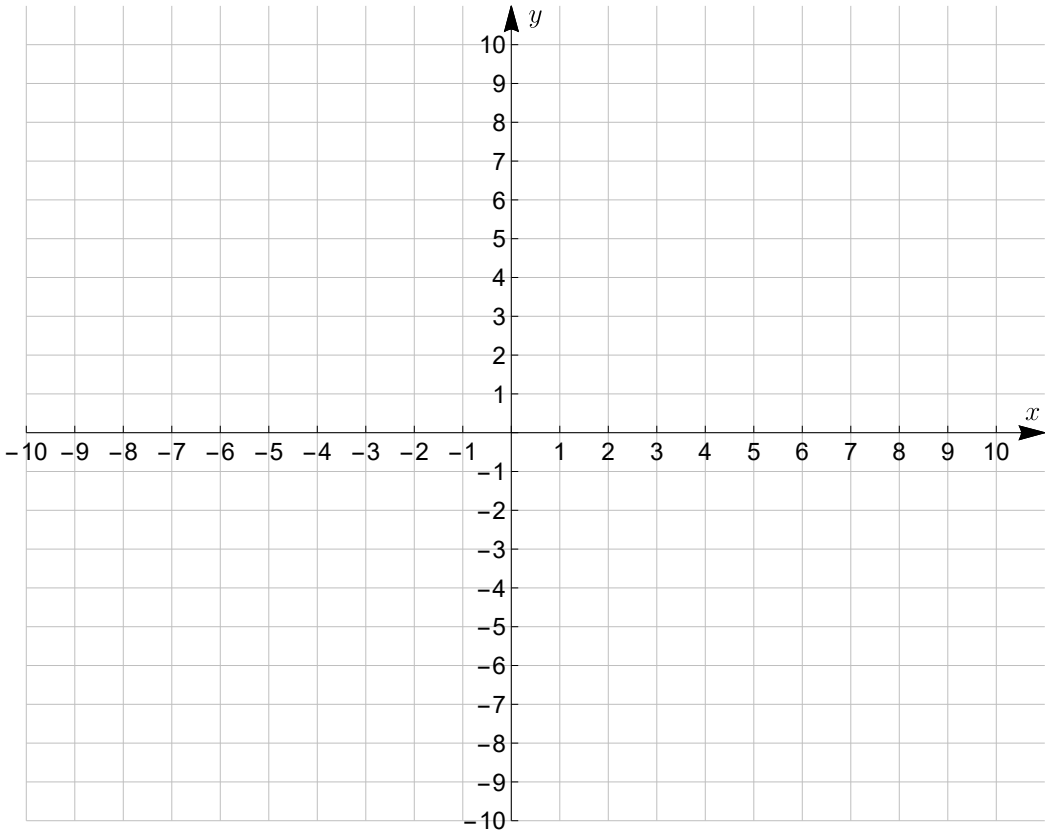
$$f(x) = 2x^2 - x + 1 \text{ and } g(x) = -4x + 2$$

(a) Find $(f \circ g)(x)$.

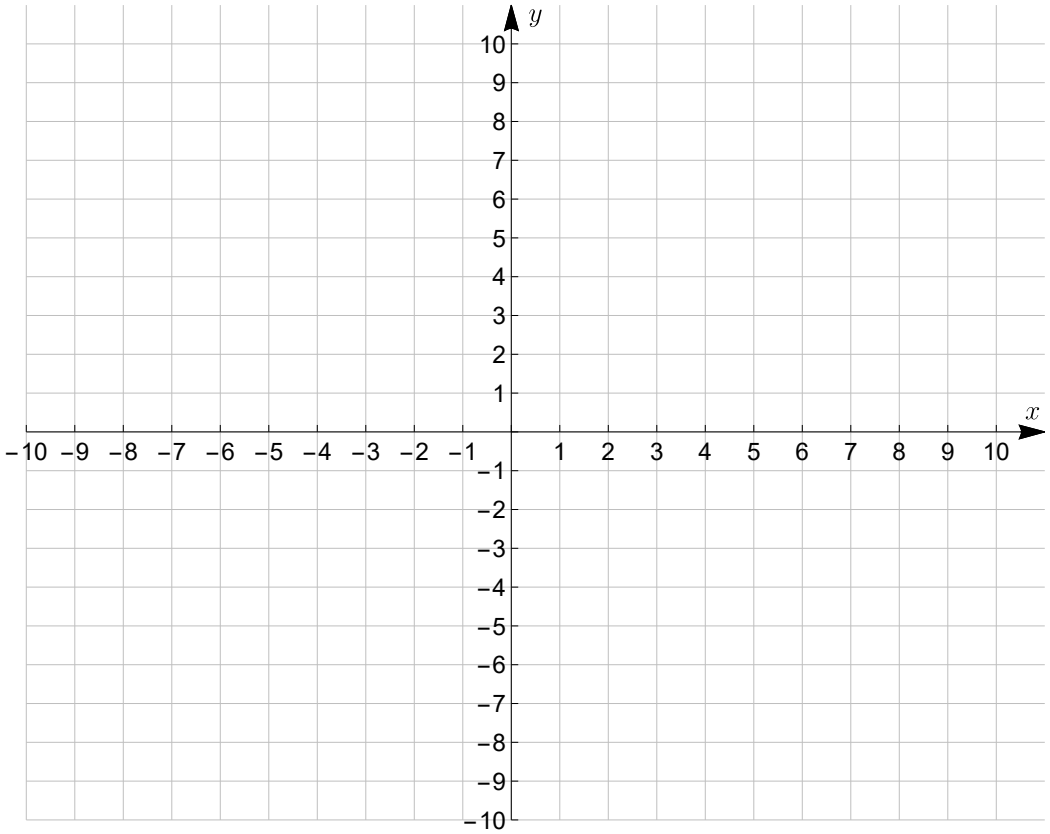
(b) Find $(g \circ f)(x)$.

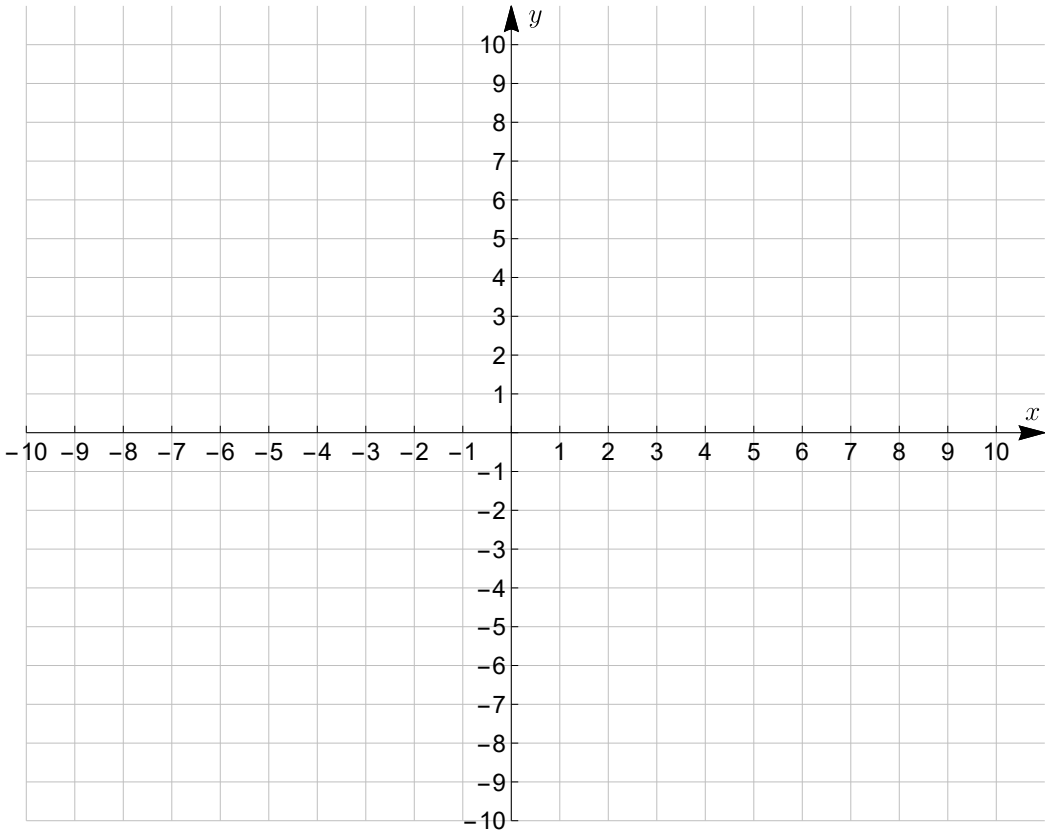
Extra Blank Graphs.





Extra Blank Graphs.





Extra Blank Graphs.