

Math 124E - Summer 2020 - Exam #2
DUE TUESDAY, JUNE 30, 2020 BY 11:59PM

Name: _____

HONOR CODE: On my honor, I have neither given nor received any aid on this examination that is not explicitly allowed in the instructions.

Signature: _____

Instructions: You may review the videos in MyMathLab or the course website, use the e-book, the MyMathLab homework and quizzes, and your calculator when working on this exam. **You may not receive help from anyone else, give help to anyone else, discuss any aspect of the exam or any items related to the exam with anyone else, or use any resources not specified in the previous sentence.** You may submit your answers and scratch work either on a printed copy of this exam or on your own paper. If you use your own paper, you do **not** need to copy the question; just be sure you clearly label which question the scratch work and answer belong to. If I can't tell with certainty which question any scratch work or answer belongs to, you will not receive credit for that work or answer. If you use your own paper, you **DO** need to copy the honor code above and sign it. To submit your scratch work and answers, you can either scan your work (if you have access to a scanner) or take pictures with your cell phone, then email me your scans or pictures. Be sure the writing in your scans or pictures is dark enough and clear enough that I can easily read what you've written. If I can't read what you've written, I can't give you credit for it. Make sure your final answers are clearly labeled. **SHOW ALL WORK ON THIS EXAM IN ORDER TO RECEIVE FULL CREDIT!!!**

No.	Score	No.	Score
1	/4	9	/5
2	/7	10	/12
3	/4	11	/8
4	/4	12	/5
5	/14	13	/11
6	/6	14	/8
7	/6	Total	/100
8	/6		

1. Determine whether the following equation defines y as a function of x .
Explain your answer! (4 points)

$$x = |y| + 1$$

2. Evaluate the function $f(x) = 2x^2 - 4$ at the given values of the independent variable and simplify.

(a) $f(-4)$ (2 points)

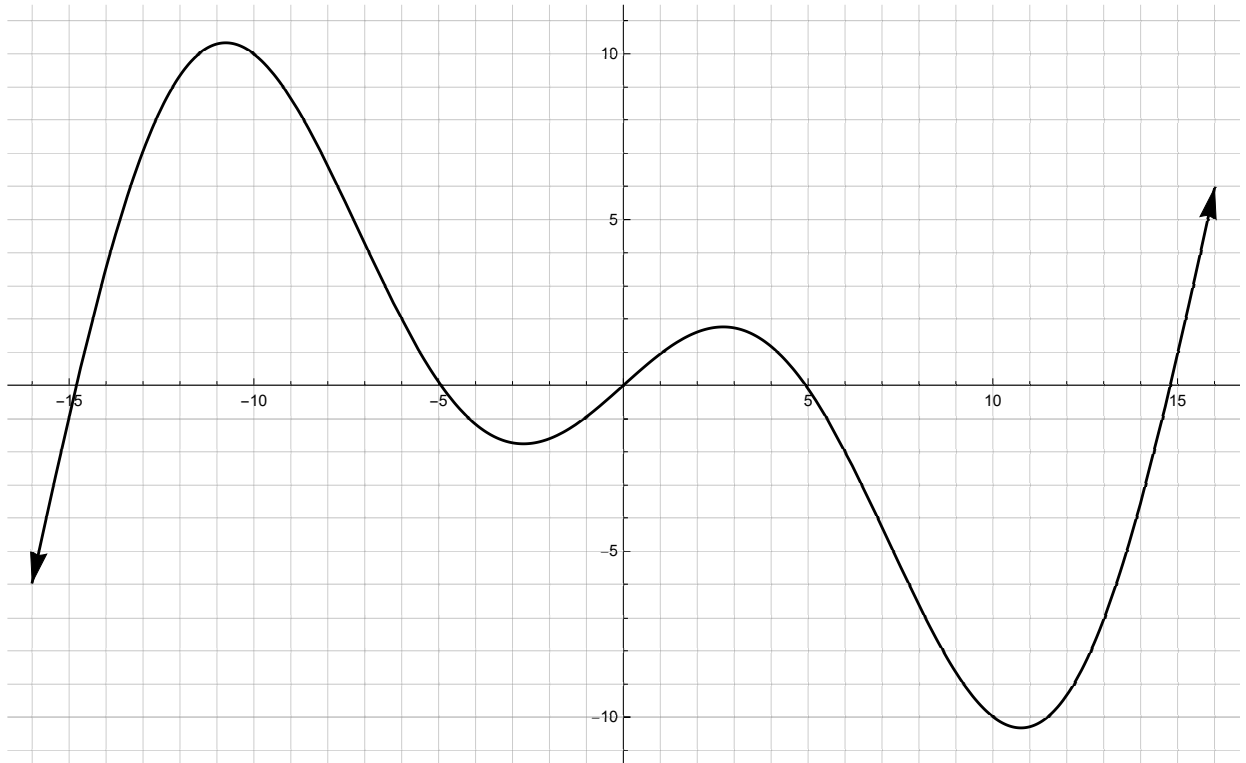
(b) $f(a)$ (2 points)

(c) $f(x + 1)$ (3 points)

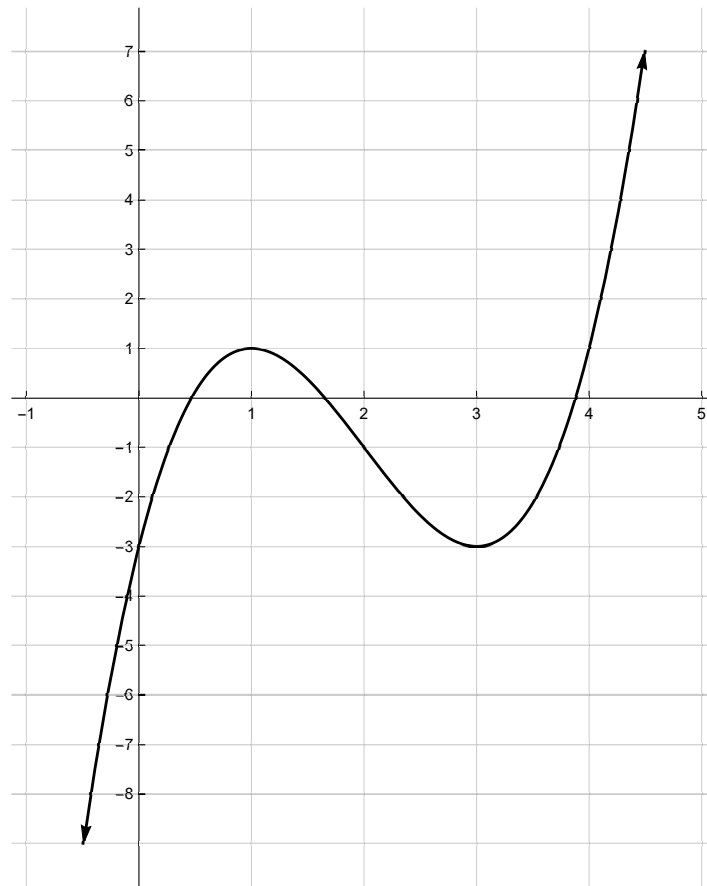
3. Without graphing, determine whether the function is even, odd or neither. Then determine whether the function's graph is symmetric with respect to the x -axis, y -axis, the origin, or none of these. **Explain your answer!** (4 points)

$$x^2 + y = -3$$

4. Use possible symmetry of the graph to determine whether it is the graph of an even function, an odd function, or a function that is neither even or odd. **Explain your answer!** (4 points)



5. Use the graph to find the following.



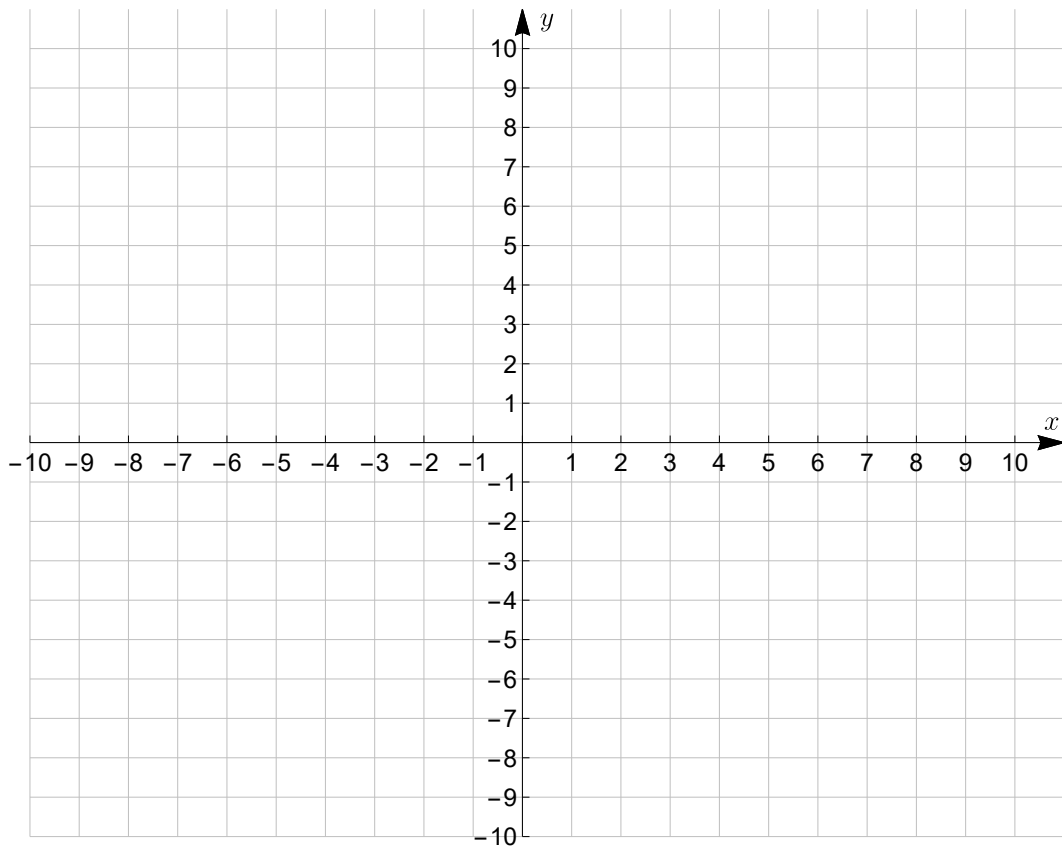
- (a) The intervals on which f is increasing. (3 points)
- (b) The intervals on which f is decreasing. (3 points)
- (c) The number at which f has a relative minimum. (2 points)
- (d) The relative minimum of f . (2 points)
- (e) $f(0)$ (2 points)
- (f) The values of x for which $f(x) = 1$. (2 points)

6. Use the piecewise function to answer the following.

$$f(x) = \begin{cases} 2x - 1 & \text{if } x \leq 2 \\ -4 & \text{if } x > 2 \end{cases}$$

(a) Find the value of $f(-3)$. (2 points)

(b) Graph the function. (4 points)



7. Find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$ for the given function. (6 points)

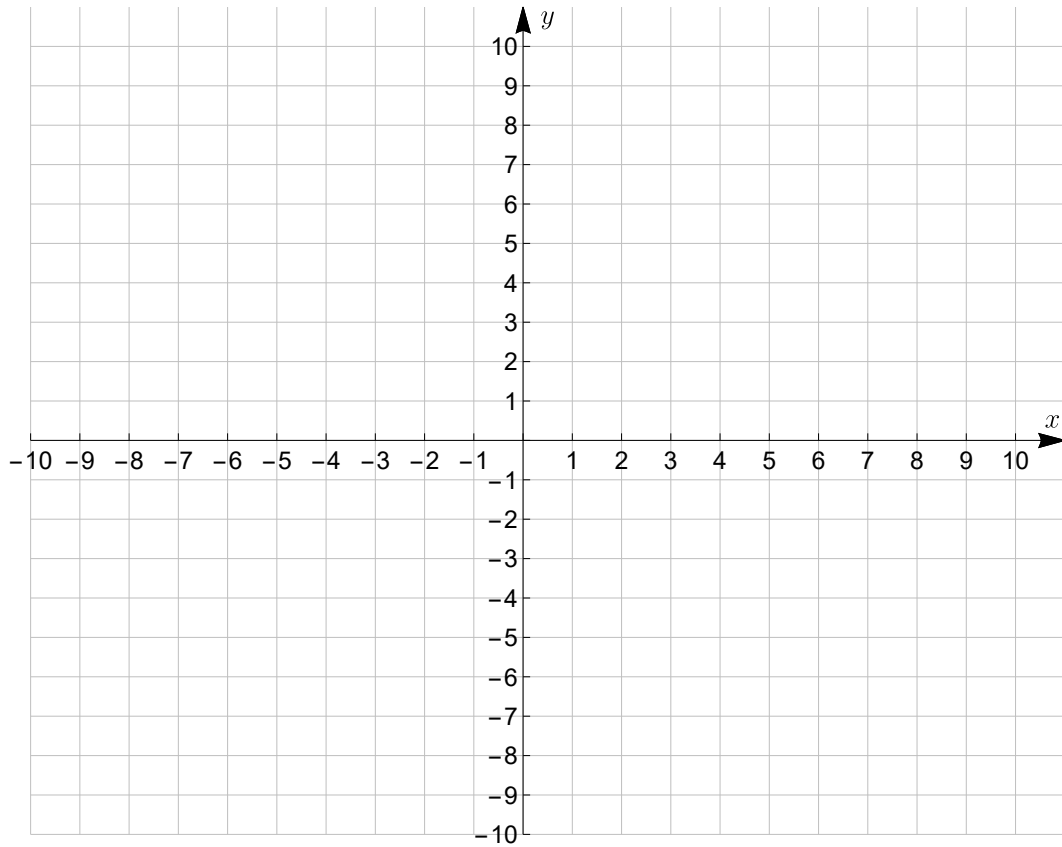
$$f(x) = 3x^2 - 1$$

8. Use the given conditions to write an equation for the line in slope-intercept form. (6 points)

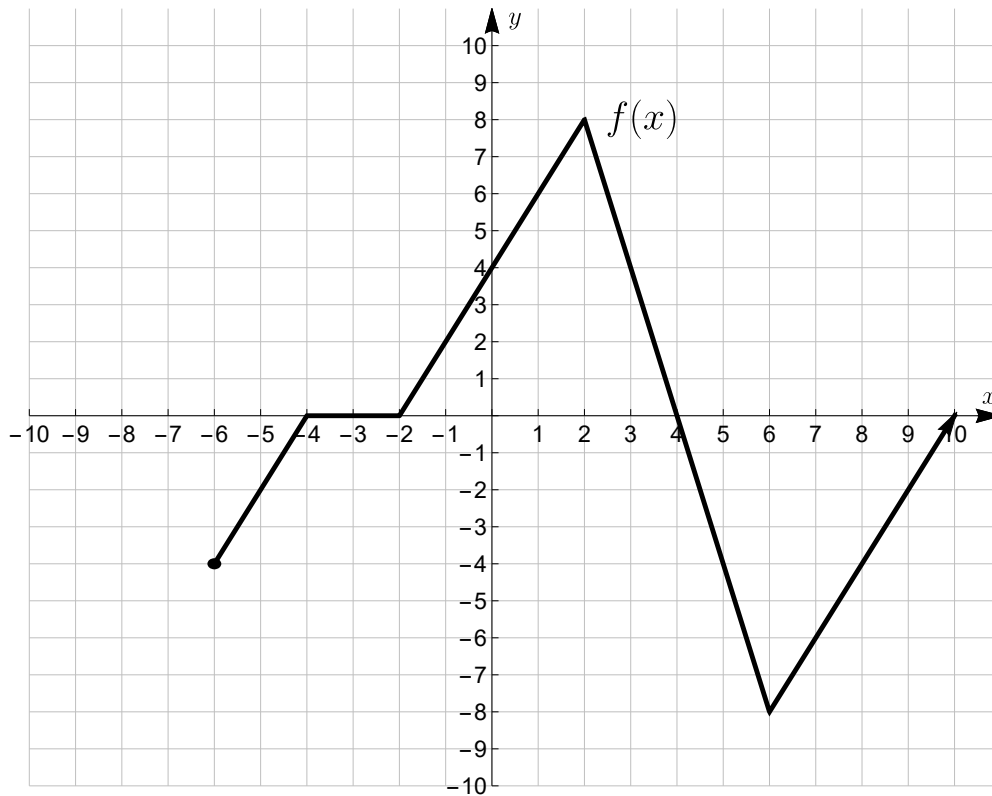
Passing through $(-1, 2)$ and $(-6, -4)$

9. Give the slope and y -intercept of the line whose equation is given. Then graph the linear function. (5 points)

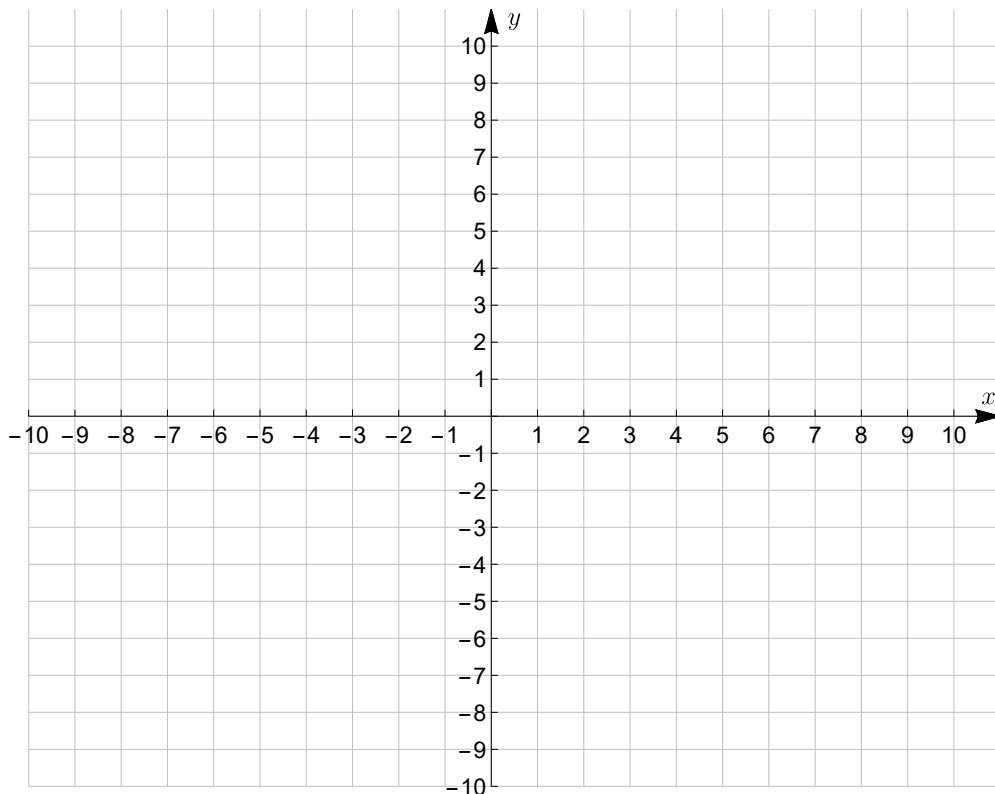
$$y = -\frac{2}{5}x + 2$$



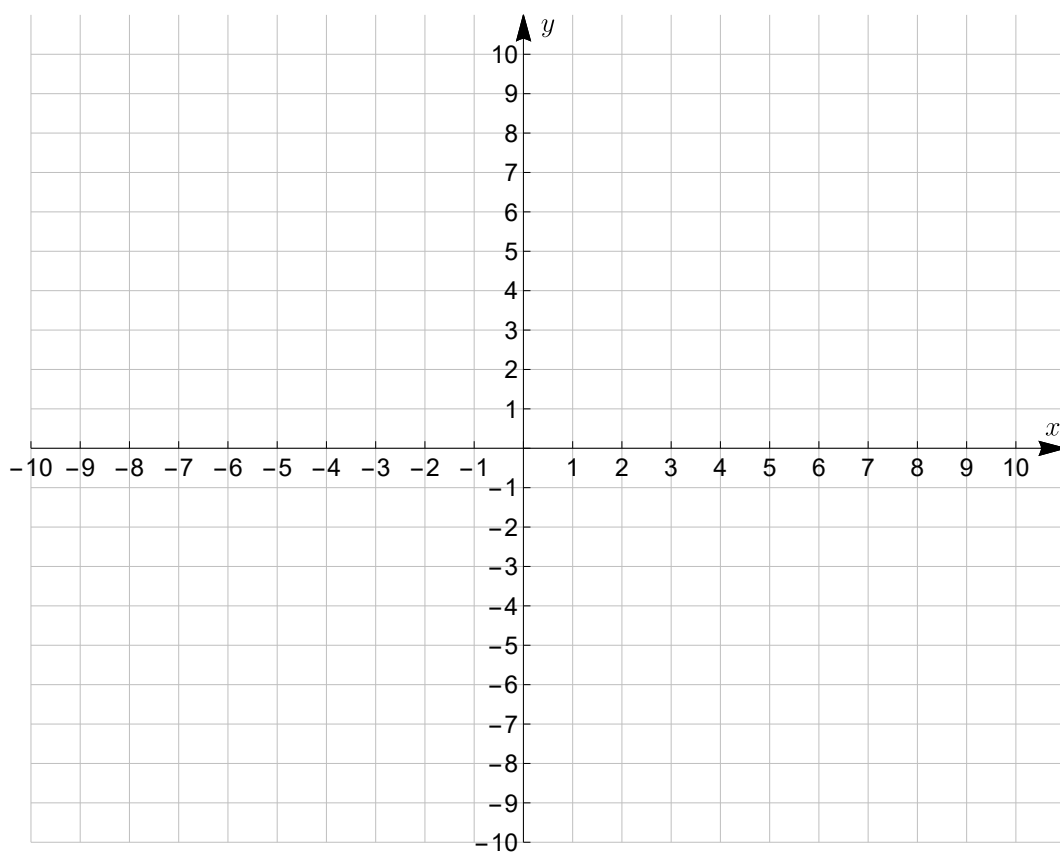
10. Use the graph of $y = f(x)$ to graph the following functions. (6 points each)



(a) $g(x) = \frac{1}{2}f(x + 3) - 1$



(b) $h(x) = -f(2x) + 2$



11. For $f(x) = 3x^2 - 2$ and $g(x) = 4x + 1$, find the following functions. (4 points each)

(a) $(f \circ g)(2)$

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

12. The function $f(x) = \sqrt{2x + 4} - 5$ is one-to-one. Find an equation for $f^{-1}(x)$. (5 points)

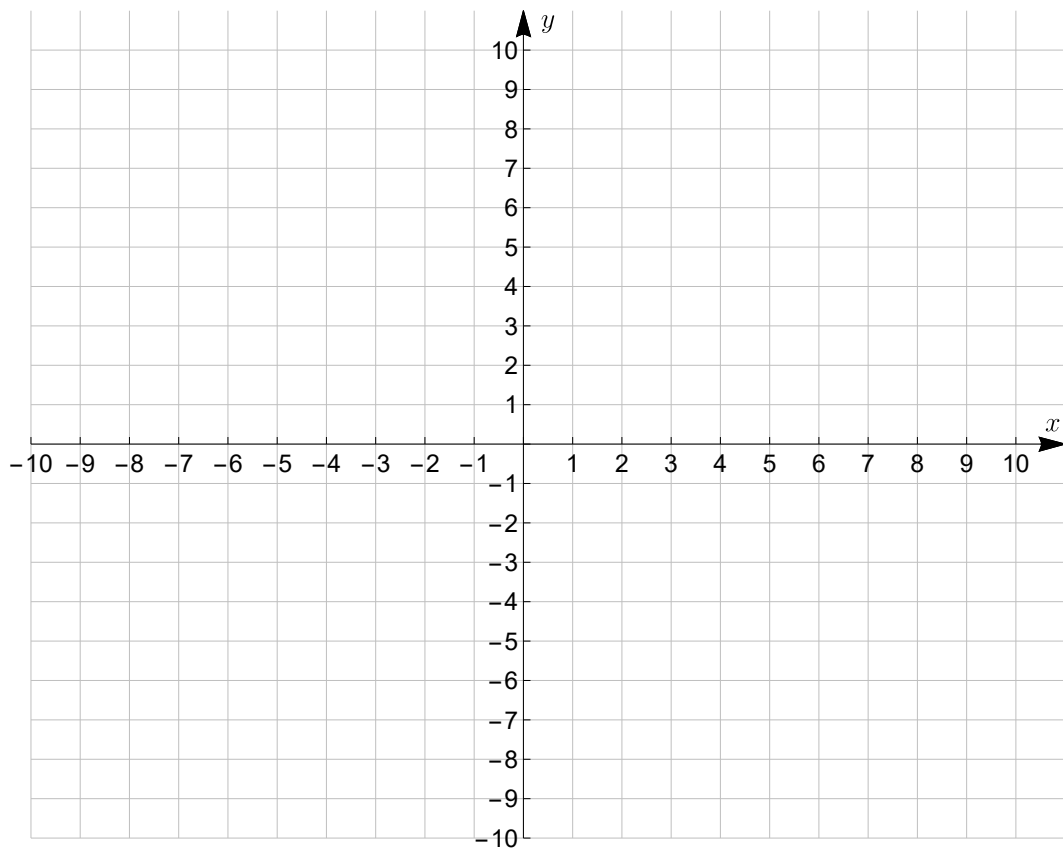
13. Use the function to answer the following.

$$f(x) = 2x^2 - 24x + 64$$

(a) Without graphing, find the coordinates of the vertex of the function.
(3 points)

(b) Write the function in vertex form. (3 points)

(c) Graph the function. (5 points)



14. Graph the function. **Be sure to state the end behavior, x -intercepts, whether each x -intercept crosses the x -axis or touches the x -axis and turns around, and the y -intercept. Explain how you determined these.** Note: I've provided the factored form of the function so that you don't have to worry about factoring it yourself. (8 points each)

$$f(x) = -\frac{1}{2}x^3 + \frac{1}{2}x^2 + 4x - 6 = -\frac{1}{2}(x - 2)^2(x + 3)$$

