

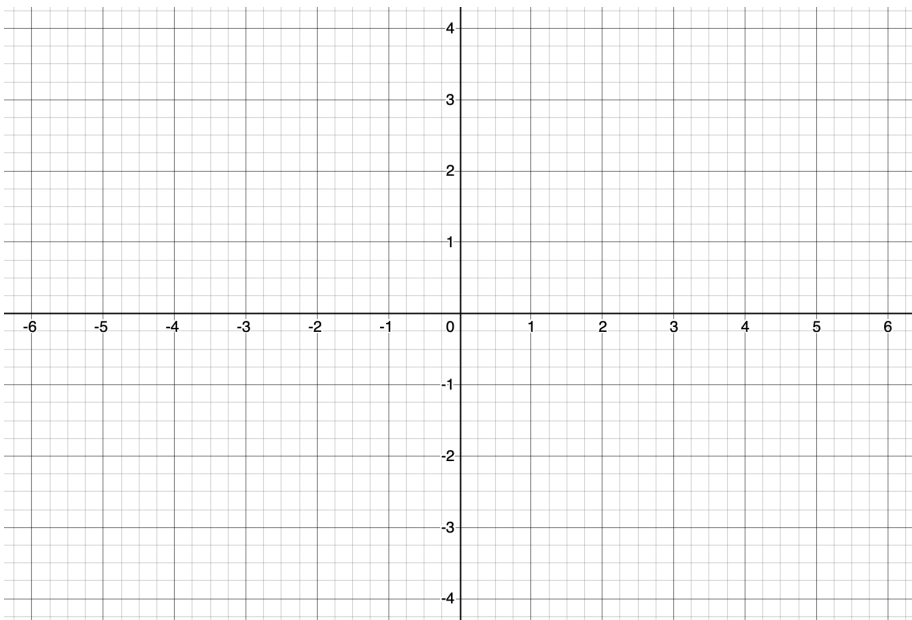
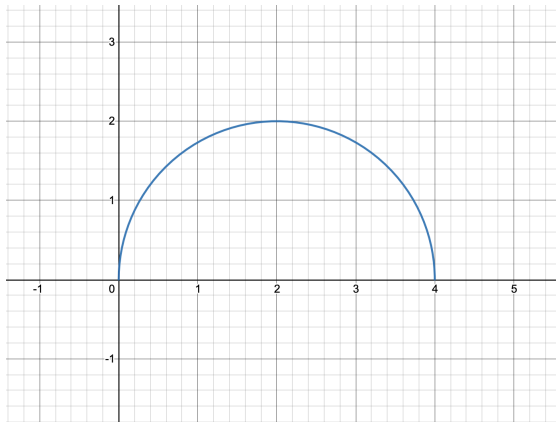
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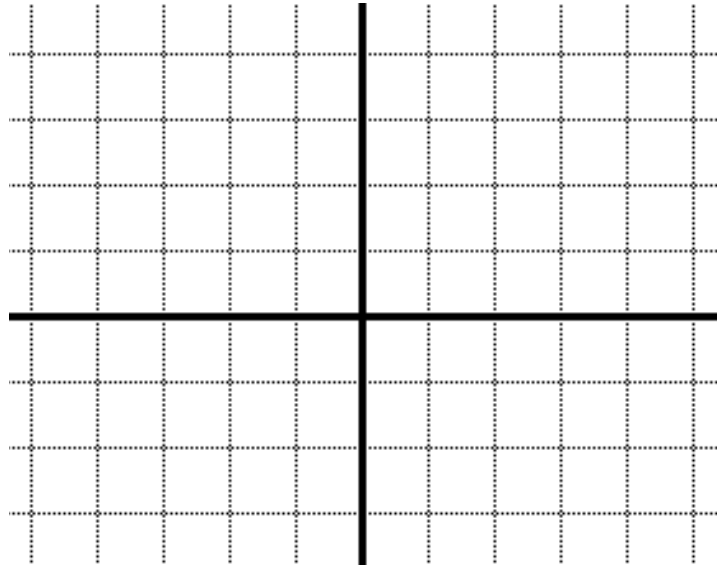
1. You have a total of 2.5 hours (or 150 minutes) to complete and upload your work for this test. You cannot pause this time. If you do not complete your work by the end of 150 minutes whatever work you have completed will be submitted as your work.
2. In a face to face setting this exam would be administered in a 90-minute window. I am affording the extra time to scan and upload your work. So pace yourself appropriately.
3. Should you miss the deadline, send your exam PDF file to ryest@chabotcollege.edu. For each 15 minutes your exam is late, there will be a 10-point deduction from your exam score. Fractional quarter hours will be rounded up to the next whole quarter hour. Maximal amount of late time is 2 hours. Do not send PDF to my e-mail prior to your Canvas deadline.
4. Put your name on every page. In addition, name your PDF file "20_LastName" with Last Name replaced with your last name. All of your pages need to be combined into one PDF file. Only one PDF will be graded. The PDF needs to meet the formatting criteria established on Canvas. Failure to meet these guidelines may result in lost points.
5. Your official work needs to be with the problem and not on any scratch paper. If you need additional pages for your work please use a blank page and insert the page immediately after the page with the problem. You must indicate that your solution continues on next page.
6. Solve each of the problems showing clearly organized work where appropriate.
7. Do not use dark paper. Do not use graph paper.
8. Unless otherwise stated, write your answers in simplest form. Answers without supporting work, gaps in the flow of thought, or solutions where your answer is not obvious may not receive full credit and may even result in a significant loss of points. A technological solution is not valid. A correct answer is not everything. Methodology is important. If your methodology does not support the answer, the answer is meaningless.
9. If you are someone who learned the material from a third party (e.g., the internet or a foreign school) please make sure you understand and can convey your solution's nuances. Don't assume that your methodology is standard. Your solution needs to be detailed to convey your methodology and more importantly that you understand the material.
10. Attempt each problem, as partial credit will be given for partially correct answers.
11. You may use your notes, text, and the videos. The internet and other people are not allowed.
12. There are 7 pages to this test and its cover page, please make sure your test includes them all.
13. Next to each problem's number below is a "panic box". By placing a check on the line, you will earn 30-50% of the points possible for whatever you put as your answer. If you only check one line, you will get 50% of the points. Two or more will net 35% of the points. Fractional points will be rounded to the nearest integer.

<u>Problem</u>	<u>Panic</u>	<u>Pts Possible</u>	<u>Problem</u>	<u>Panic</u>	<u>Pts Possible</u>
1	_____	5	6	_____	5
2	_____	5	7	_____	5
3	_____	5	8	_____	10
4	_____	5	9	_____	10
5	_____	5			
			Total		_____

1. (5 Points) Below is a graph of a function $g(x)$. Identify all transformations (inversions, stretching / contractions) and translations (shifts up /down / left / right) for the function $f(x) = -2g(2x - 4) + 1$. Use these to sketch the graph of $f(x) = -2g(2x - 4) + 1$. Show your work. Note: I am not looking for precision with your graph (the output), rather I am looking to see if you understand the concepts of transformation and translations and apply them to a graph—one where you do not have the explicit formula for. Documenting your work in the space provided below, this should include intermediate steps used to determine the final graph. If need be, attach additional paperwork afterwards.



2. (5 Points) Graph the function $f(x) = \begin{cases} -x & \text{if } x < -1 \\ 2 - x^2 & \text{if } -1 \leq x \leq 2 \\ x - 2 & \text{if } 2 < x \end{cases}$



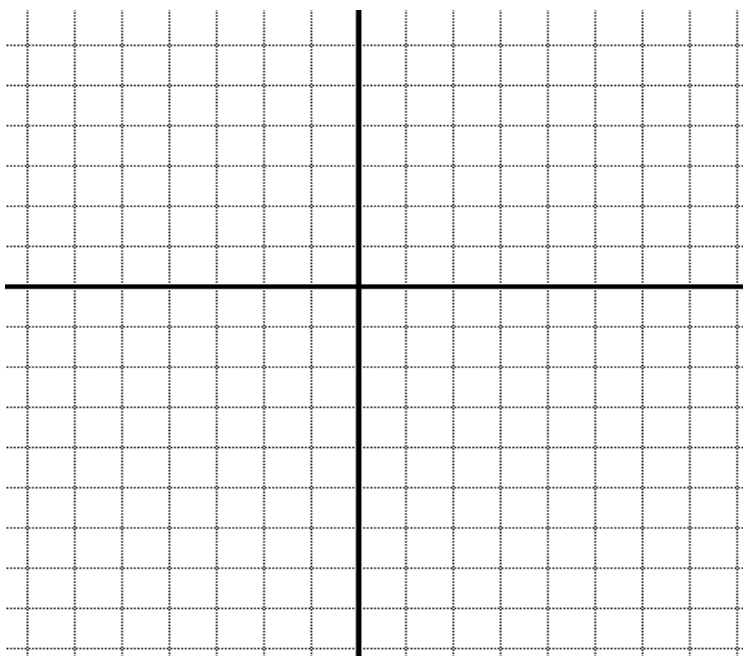
3. (5 Points) If $f(x) = 2x - 3$ and $g(x) = (x - 2)^2$, determine $(g \circ f)(x)$. You do not have to simplify your answer once you determine the composite.

4. (5 Point) Find at least two functions defined implicitly by the given equation
 $y^2 = 2xy - x^2 + 4x$

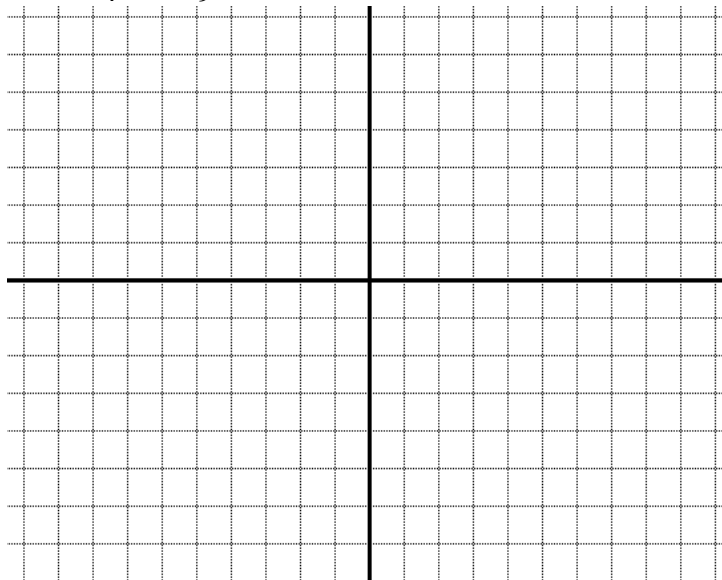
$$f_1(x) = \underline{\hspace{10cm}}$$

$$f_2(x) = \underline{\hspace{10cm}}$$

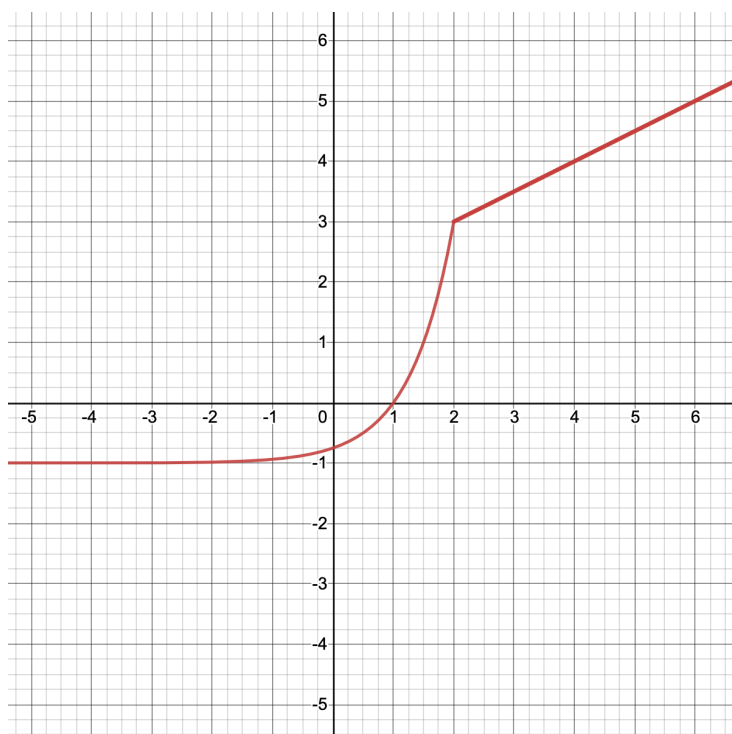
5. (5 Point) Sketch the graph of $\left(\frac{x-1}{4}\right)^2 - \left(\frac{y+2}{3}\right)^2 = 1$.



6. (5 Point) Sketch the graph of $\frac{(y+1)^2}{4} + \frac{x^2}{9} = 1$.



7. (5 Points) The graph of a one-to-one function is given below. Sketch its inverse on the same graph.



8. (10 Points) Determine the inverse $f^{-1}(x)$ for the one-to-one function

$f(x) = 2 - \frac{3}{x-2}$. Determine the range of $f(x)$.

$f^{-1}(x) =$ _____

Range of $f(x)$: _____

9. (10 Points) If $f(x) = \frac{1}{x-5}$ simplify $\frac{f(x+h) - f(x)}{h}$.
