

Written Homework 6

Math 111

Due February 28th at the start of class

Textbook Exercises:

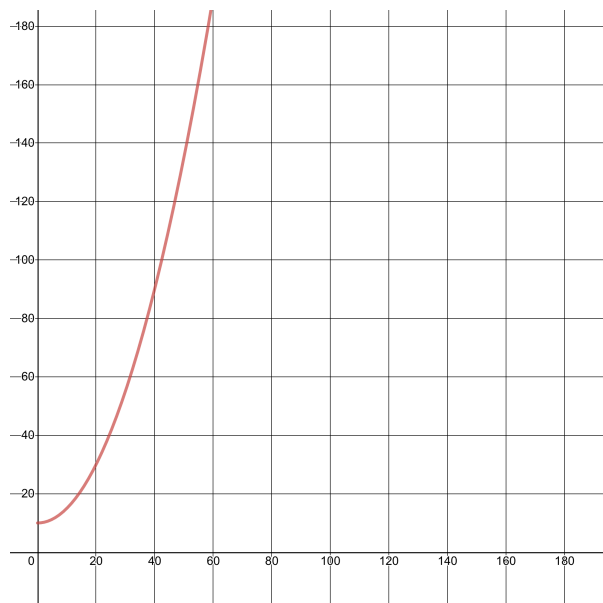
Section 8: 2, 4, 10, 12, 14, 16, 22, 24, 25, 26, 27, 32

Note that your book uses $f^{[-1]}$, rather than f^{-1} , to denote the inverse of the function f . This is nonstandard, and we won't use it outside of the textbook.

Exercise 1: Let $c = G(p) = \frac{5p+4}{2p-2}$.

- a) Find the domain of G and its behavior as $p \rightarrow -\infty$.
- b) Find G^{-1} , making sure the independent variable is correct (it's not p !)
- c) What is the image of G ?
- d) What is $(G \circ G^{-1})(0)$? What about $(G^{-1} \circ G)(1)$?
- e) Suppose G is the function that outputs the cost of a certain type of antique, given that p of them are known to exist in the world. (This should make some sense — the function is very large when p is small, but it settles down when p is large). Write a sentence interpreting G^{-1} .

Exercise 2: Ten frogs are dropped in a pond that contains no other frogs. The following graph gives the number of frogs in a pond t days after the first ten are added.



- If this function is $N = P(t)$, what does the inverse function P^{-1} do? Write a sentence explaining.
- Sketch a graph of the inverse function.
- If P is completely defined by this graph (and it continues indefinitely upward and to the right), then what is the domain of P^{-1} ? Make sure this agrees with the sketch you drew.

Bonus: Let f and g be functions such that the composition $f \circ g$ makes sense. What's another way to write $(f \circ g)^{-1}$ in terms of f and g ?