

Mth 30, Homework 3 on sections 1.7, 2.1

Due by Feb 22.

Please use lots of space and explain your answers, showing clearly any work you had to do. Each question is worth 3 points.

(1) Let f be a function with inverse f^{-1} . Suppose $f(1) = 5$ and $f(5) = 2$.

(a) Compute $f^{-1}(5)$

(b) Compute $f^{-1}(f(5))$

(Remember that if a function sends a to b then its inverse sends b back to a . And don't get confused: here $f^{-1}(x)$ does not mean $\frac{1}{f(x)}$)

(2) Use the three steps we looked at in class to find the inverse of $f(x) = 2x + 3$

(Your final answer should look like $f^{-1}(x) = \frac{x+5}{3}$ or something similar.)

(3) Use the three steps we looked at in class to find the inverse of

$$f(x) = \frac{x-4}{5x+6}$$

(Step 1: write $y = \frac{x-4}{5x+6}$. Step 2: solve for x and to do this, begin by multiplying both sides by $5x+6$ to get $y(5x+6) = x-4$. Then distribute and move the x s to one side...)

(4) Let $g(x) = -7x + 13$.

(a) Is $g(x)$ a linear function?

(b) Find $g(3)$

(c) Find an x so that $g(x) = 48$

(5) A truck begins its trip 30 miles from NYC and gets 60 miles further away every hour.

(a) Write the distance of the truck from NYC as a linear function $f(t)$.

(b) How far is the truck from NYC after 6 hours?

(c) Is your function increasing or decreasing?

If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 12:00 - 1:00, Wed 12:00 - 1:00 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.