

Mth 30, Homework 1 on sections 1.1, 1.2, 1.3

Due by Wed, Feb 7.

Here are 8 questions for you to try. Write all your working out and answers on your own notepaper. Please use lots of space and as many pages as you want, so I can include corrections or comments - otherwise I will ask you to redo it. You do not need to write the questions, but it is very important that you show clearly any work you had to do to get your answers. Most questions are worth 3 points each.

(1) For the function $f(x) = x^2 + 3x - 2$, find

(a) $f(0)$

(b) $f(4)$

(c) $f(-2)$

(You should get -4 for part (c).)

(2) For the function $g(x) = 5x^2 + 8x$, compute and simplify

(a) $g(-3x)$

(b) $g(x + 2)$

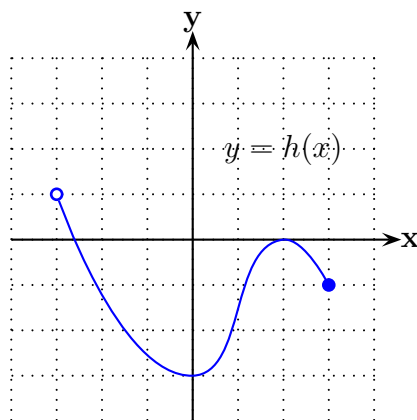
(3) Use interval notation to write the set of all real numbers between -1 and 14 where we include -1 but not 14 .

(4) Use interval notation to write the set of all real numbers greater than or equal to 3 .

(5) What is the domain of this function: $f(x) = -3\sqrt{x + 16}$

(Remember that the numbers inside the square root must be ≥ 0 .)

(6) For this graph of $h(x)$,



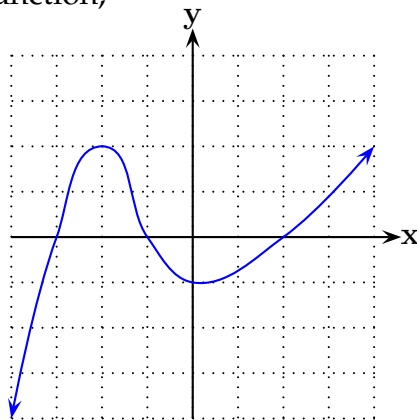
answer the following questions, using interval notation for parts (c), (d):

- (a) Find $h(2)$
- (b) Find $h(-2)$
(Hint: From -2 on the x axis go straight down until you hit the graph. Give this y value, it's close to -1 .)
- (c) Give the domain of h (Hint: if you shine lights from above and below, where is the shadow on the x axis?)
- (d) Give the range of h

(7) For the same graph as in the last question:

- (a) Where is h increasing? Use interval notation for your answer. (Hint: look at x between 0 and 2.)
- (b) Where is h decreasing?
- (c) Give the coordinates of any local maximums and minimums.
- (d) Is h one-to-one? (Use the horizontal line test.)

(8) (7 points) For this graph of a function,



answer these questions, using interval notation for parts (c) to (g):

- (a) Find all its x -intercepts
- (b) Find its y -intercept
- (c) Give its domain (remember, those arrows mean it goes forever in that direction)
- (d) Give its range
- (e) Where is it increasing?
- (f) Where is it decreasing?
- (g) Where is it positive?
(Hint: give the x s where the graph is above the x axis.)

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.