

note

4 views

Daily Challenge 8.3

(Due: Saturday 6/16 by meeting time, 7 pm Eastern)

Last challenge on the consolidation document! There are three actionables:

1. Answer question 4, "More Practice with Proofs", either in the student response below or on [Overleaf](#). The statement is reproduced below.

(a) Prove from the definitions of "odd" and "even" that the sum of two odd integers is even.
(b) Suppose that the equation $ax^3 + bx^2 + cx + d = 0$ has only real roots, and that the four coefficients a, b, c, d are all positive. Prove that the roots are all negative. [Hint: contradiction.]
(c) Let A be any set. Prove that $\emptyset \subseteq A$. [Hint: vacuously true.]
2. Correct the solution to problem 4d, the proof that a strictly increasing function has an inverse function (the original proof was incorrect because it attempted to show the logical inverse of the original statement). Edit your response directly in [Overleaf](#).

Also correct any other errors in consolidation document solutions (which I will list here as they occur).
3. Prepare for the British-style tutorial session at the meeting. You should pick out a few parts of the consolidation document problems that you found especially interesting and plan a presentation of your solutions using the drawing tablet and a program like MS Paint or Krita. We'll record and put your solution video on YouTube.

The target audience is someone who has understood all of the chapter 1 material, but has not solved the problem you're talking about. For example, you might imagine that you're presenting to a past version of yourself before you solved the problem. Tune your level of explanation to make the presentation easy to follow for this hypothetical student; try *not* to speak as though the listener already understands the problem.

Aim to have enough content to present for 30 minutes. I'll periodically interrupt with questions, which will probably take up another 15-30 minutes.

daily_challenge

Updated 9 months ago by Christian Ferko

followup discussions for lingering questions and comments