

## MATH 513 HOMEWORK 2, SPRING 2019

DUE AT THE BEGINNING OF CLASS ON MONDAY, FEBRUARY 11

One goal for this course is for you to develop your skill in effectively communicating mathematics. With this in mind, you should clearly write up your solutions. Solutions with little or no justification will receive little or no credit.

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- (1) Read through 3.3 in the course textbook.
- (2) We proved in class that, for real numbers  $x$  and  $y$ ,  $x < y \iff -y < -x$ .
  - (a) Would you use the proof we did in class with your high school algebra students? Explain.
  - (b) Show (and explain) how you could illustrate this theorem graphically for high school students.
  - (c) Look at the Next Generation Standards or at the NY State Modules, and explain how this theorem is addressed in one of these sources.
- (3) Using the four properties of the order relation  $<$ , prove that the complex numbers do not form an ordered field.
- (4) On exercise 3, section 3.2, do any four of parts (a) through (m). You can use any earlier part of the problem, regardless of whether you proved it.
- (5) Section 3.2, do problems 4 and 6.(a) and (b).