MATH220: Discrete Structures

Spring 2014

Homework 02: Proofs

Assignment is DUE as indicated on the course schedule.

*This is a **group assignment**. Work with 1-2 classmates, and submit as a group on Gradescope.*

Notes

Your final submission must be readable. It is your responsibility to write up your answers in a way that is easy to read and follow. You may handwrite your answers or type them, and you can submit a PDF or images on Gradescope.

Be sure to show *all* of your work for full credit!

Problems

1. Let m and n be integers. Prove that $n^2 = m^2$ if and only if $n = m$ or $n = -m$.

2. Show that if k is odd, then k^3 is odd.

3. Prove that if $2y$ is an irrational number, then y is an irrational number.

4. Consider this definition of factorial: $1! = 1, n! = n(n-1)!\ for\ all\ n > 1$. Use induction to prove for all $n \geq 1, n! \geq 2^{n-1}$.

Submission

Submit on Gradescope. Remember to tag your groupmates!

Rubric

	Missing / Not Complete (0)	Approaching (2)	Meets (4)	Exceeds (5)
Readability	Assignment is unreadable or not submitted.	Assignment includes formatting, but significant improvements could be made. For example, clear labeling of problems and subparts, proofreading.	Assignment includes formatting, but minor improvements could be made. For example, clear labeling of problems and subparts, proofreading.	Assignment is well formatted and easy to read. Text has been proofread.
Completeness	Less than half of assignment is attempted.	Roughly half of assignment has been attempted. On the problems that have been completed, effort is evident. OR All of the assignment has been attempted, but effort is not evident in many parts.	At least 80% of assignment has been attempted. On the problems that have been completed, effort is evident. OR All of the assignment has been attempted, but effort is not evident a few parts.	All of the assignment has been attempted, and effort evident throughout.
Correctness	All answers are incorrect or missing.	Of the complete problems, at least half have been approached correctly.	Of the complete problems, at least 80% have been approached correctly.	All complete problems are approached correctly.