

MATH 634, Spring 2014

HOMEWORK 0

to be completed online **before class** on Wednesday 1/29 for credit.

Thoroughly read the class web page including the syllabus and schedule. This should answer all the questions that you may have about the class.

0. (a) Create an account on Wikipedia if you do not already have one. After reading http://en.wikipedia.org/wiki/Wikipedia:Username_policy, choose a unique username to represent yourself on Wikipedia. They suggest that you may wish to choose a username that cannot be traced back to you in real life.
- (b) Email me at chanusa@qc.cuny.edu with the following four things: (1) Your name, (2) your class (Math 634), (3) the email address where you are best contacted, (4) your wikipedia username, and if you are an undergraduate, (5) your expected graduation year. Thanks!
- (c) Thoroughly read the class web page including the syllabus and schedule. This should answer all the questions that you may have about the class. Next, take the syllabus quiz on Blackboard. **Retake** the quiz as necessary to earn a score of 100%.

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HOMEWORK 1
due 5:00PM on Wednesday, January 29.

Background reading: Pearls in Graph Theory, Section 1.1.

Follow the posted homework guidelines when completing this assignment.

Problems **1D**, **1P**, and **1E** should be typed (or written up) and handed in as class starts on Wednesday 1/29:

1D. (**D** stands for Definitions.)

- simple graph
- graphic sequence
- bipartite graph
- complete bipartite graph $K_{m,n}$
- wheel graph W_n

Reminder: For each of these vocabulary words,

- (a) Give a precise definition statement for the vocabulary word.
- (b) Explain in your own words what you understand this precise definition to mean.
- (c) Give one or more examples that highlight the vocabulary word.
(It may make sense to give two examples: a true example and a non-example.)

1E. (**E** stands for Exploration.)

Write a paragraph or two giving an example of where you have seen graphs in real life. (Do not use the examples from class unless you have a unique perspective.)

For the example you give,

- (a) **Explain** what corresponds to the abstract concepts of
 - vertices
 - edges
 - vertex degree
- (b) **Discuss** whether a vertex can have a degree of zero or one.

1P. (**P** stands for Proof.)

Seven students go on vacations. They decide that each will send a postcard to three of the others. Is it possible that every student receives postcards from precisely the three to whom he sends postcards?

[*Note: If you intend to use graph theory, explain why your reasoning applies.*]

Reminder: For **Proof** questions, you may not use any resources other than class material, your classmates, and your professor. In particular, no internet searches may be used to solve this problem. On the other hand, it is permitted and sometimes encouraged to consult the internet or additional resources for help in understanding the **Definition** questions or completing the **Exploration** questions.