

Study guide for exam 2, Math 22, Fall 2010

- (1) Solve a linear congruence and tell how many solutions in the original modulus
- (2) Use modular arithmetic correctly
- (3) Solve a problem involving  $\phi(n)$ .
- (4) Be able to tell whether a graph has a Hamiltonian cycle or an Euler circuit
- (5) Know how to use binary matrix codes to check for and detect errors.
- (6) Understand basics of error-correcting and error detecting codes.
- (7) Be able to find the chromatic number of a graph.
- (8) Be able to draw a graph with a given degree sequence.
- (9) Understand directed graphs.
- (10) Know how to use the RSA code.
- (11) Be able to represent a graph with a matrix and know how to use powers of the adjacency matrix to find numbers of paths between vertices.
- (12) Be able to decide whether two graphs are isomorphic.
- (13) Find the shortest path from one vertex to another in a weighted graph.
- (14) Understand the use of logical connectives, and be able to build the truth table for a logical statement
- (15) Understand the difference between a statement, its converse, its inverse, and its contrapositive.
- (16) Be able to give a simple proof by contradiction.