Math 308 P Conceptual Problems # 1 Due Wednesday, January 9

- (1) (Geometry Question) For each part (a)-(c) below, give an example of a linear system of equations in two variables that has the given property. In each case, draw the lines corresponding to the equations in the system.
 - (a) The system has no solution
 - (b) The system has exactly one solution
 - (c) The system has infinitely many solutions

For each part (i)-(iv) below, show how to perform the indicated actions to obtain the desired result, if this is possible. In each case, justify your answer in words.

- (i) Add or remove equations in (b) to make an inconsistent system.
- (ii) Add or remove equations in (b) to create infinitely many solutions.
- (iii) Add or remove equations in (b) so that the solution space remains unchanged.
- (iv) Can you add or remove equations in (b) to change the unique solution you had to a different unique solution?