# 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?

