MATH241: Linear Algebra Problem Set #1

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1. **(Systems of equations)**
   (a) Find all solutions, if they exist, to the following systems of equations:
      i. $x + 2y + 3z = 5$
      $4x + 5y + 6z = 2$
      $3x + 2y + 1z = 1$
      ii. $3x + 2y + z = 8$
      $4x + 3y \quad = 6$
      $x \quad + z = 3$
      iii. $x + 2y + 3z = 5$
      $4z = 8$
      iv. x+y+z=25
      5x+3y+2z=0
      y-z=6
      v. x+2z+y=-1
      z+x-2y=-5
      3x+y+z=3
      vi. x+3y+4z=3
      2x+3z+7y=-7
      6z+2x+8y=-4
      vii. $2y + 6z = 2$
      $3x + 9y + 4z = 7$
      $x + 3y + 5z = 6$
      viii. $x + 2y - 3z = 2$
      $6x + 3y - 9z = 6$
      $7x + 14y - 21z = 13$
      ix. $x + y + z = 6$
      $x + 2y + 2z = 11$
      $2x + 3y - 4z = 3$

x. $x + y + z = 7$
$x + 2y + 2z = 10$
$2x + 3y - 4z = 3$

xi. $2x + 3y + 2z = 3$
$4x - 5y + 5z = -7$
$-3x + 7y - 2z = 5$