

1. Suppose  $A$  is an  $n \times n$  matrix and the system of equations  $AX = B$  has a unique solution, then  $\det A = ?$
2. Suppose  $A$  is an  $n \times n$  matrix and  $AX = B$  is a system of eq's and  $\text{RANK}[A] = \text{RANK}[A|B] = k$ . Is the system consistent? How many solutions?
3.  $\text{RANK} \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \\ 1 & -1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} = ?$  4 IS  $x + y + z = 1$  consistent  
 $x - y - z = 2$  why?  
 $3x + y + z = 3$
5. Given  $A\bar{X} = B$   $B = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$   
 AND  $A^{-1} = \begin{bmatrix} 1 & \frac{1}{2} & 2 \\ 0 & -1 & 7 \\ 1 & 0 & -\frac{1}{3} \end{bmatrix}$   
 what is  $\bar{X}$ ?  
 6. Given:  $x_1 + x_4 + x_5 = 4$   
 $x_2 - 3x_4 - x_5 = -1$   
 $x_3 - \frac{1}{2}x_4 + 2x_5 = 7$   
 find a basic solution.
9. Solve  $5x + y + 2z = 2$  for  $x$  &  $y$  in terms of:  
 $2x - y - z = 4$   
 can you solve for  $y$  &  $z$  in terms of  $x$ ? Why?
10. A factory makes regular, deluxe and super-deluxe dingbats. A regular dingbat is made out of 1 gismo and 4 whatamacallits. A deluxe is made out of 1 gismo, 2 whatamacallits and 2 things. A super-deluxe requires 1 gismo, 4 whatamacallits and 2 things. The store has 600 gismos, 2000 whatamacallits and 1000 things. How many dingbats of each type must be made to completely use up the store room,