

1. Solve the system represented by the augmented matrix for x , y , and z :

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & 6 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 1 \end{array} \right]$$

$$x = 6$$

$$y = -3$$

$$z = 1$$

$$(6, -3, 1)$$

2. Solve the system represented by the augmented matrix for x , y , and z :

$$\left[\begin{array}{ccc|c} 1 & 3 & 0 & -1 \\ 0 & 1 & -2 & 5 \\ 0 & 0 & 0 & 0 \end{array} \right]$$

inf. sol.

$$\Rightarrow z = z$$

$$\Rightarrow y - 2z = 5$$

$$y = 5 + 2z$$

$$\Rightarrow x + 3y = -1$$

$$x = -1 - 3(5 + 2z)$$

$$= -1 - 15 - 6z$$

$$= -16 - 6z$$

Ordered triplet: (x, y, z)

$$= (-6z - 16, 2z + 5, z)$$

Math 111 - Quiz #8

Name Key

1. Find the product of the matrices:

$$\begin{bmatrix} 3 & 4 & 5 \\ 0 & 1 & 2 \\ -3 & -2 & -1 \end{bmatrix} \begin{bmatrix} 1 & -2 \\ 0 & 5 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 3+0+15 & -6+20+0 \\ 0+0+6 & 0+5+0 \\ -3+0+-3 & 6-10+0 \end{bmatrix}$$
$$= \begin{bmatrix} 18 & 14 \\ 6 & 5 \\ -6 & -4 \end{bmatrix}$$

2. Find the determinant:

$$\begin{vmatrix} -1 & 1 & 3 \\ 4 & 0 & -7 \\ 2 & -1 & 5 \end{vmatrix} =$$

$$1(-1) \begin{vmatrix} 4 & -7 \\ 2 & 5 \end{vmatrix} + 0(1) \begin{vmatrix} -1 & 3 \\ 2 & 5 \end{vmatrix} + (-1)(-1) \begin{vmatrix} -1 & 3 \\ 4 & -7 \end{vmatrix}$$

$$= -(20 - -14) + (7 - 12) = -34 - 5 = -39$$