SOLVE SIMULTANEOUS LINEAR EQUATION USING CROUT'S METHOD

$$2x + 2y + z = 1$$
Solve $x - 2y + 2z = 2$ Using Crout's Method
$$2x - y - 2z = 4$$

SOLUTION

A X = B

$$\begin{bmatrix} & & \end{bmatrix}\begin{bmatrix} \end{bmatrix} = \begin{bmatrix} \end{bmatrix}$$

A = L U

$$\begin{bmatrix} & & \end{bmatrix} = \begin{bmatrix} & 0 & 0 \\ & & 0 \\ & & \end{bmatrix} \begin{bmatrix} & & \\ 0 & & \\ 0 & 0 & \end{bmatrix}$$

$$= \begin{bmatrix} a & ag & ah \\ b & bg + c & bh + ci \\ d & dg + e & dh + ei + f \end{bmatrix}$$

$=$

$a =$	$ag = 2$ $g =$	$ah = 1$ $h =$
$b =$	$bg + c = -2$ $(\ )(\ ) + c = -2$ $c =$	$bh + ci = 2$ $(\ )(\ ) + (\ )i = 2$ $i =$
$d =$	$dg + e = -1$ $(\ )(\ ) + e = -1$ $e =$	$dh + ei + f = -2$ $(\ )(\ ) + (\ )(\ ) + f = -2$ $f = -2$

So the value of $L = \begin{bmatrix} & 0 & 0 \\ & & 0 \\ & & \end{bmatrix}$ and $U = \begin{bmatrix} & & \\ 0 & & \\ 0 & 0 & \end{bmatrix}$

LY = B

$$\begin{bmatrix} & 0 & 0 \\ & & 0 \\ & & \end{bmatrix} \times \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} & \\ & \\ & \end{bmatrix}$$

$$\begin{matrix} (\ )y_1 \\ (\ )y_1 - (\ )y_2 \\ (\ )y_1 - (\ )y_2 - (\ )y_3 \end{matrix} = \begin{bmatrix} & \\ & \\ & \end{bmatrix}$$

$y_1 =$ $y_2 =$ $y_3 =$

UX = Y

$$\begin{bmatrix} & & \\ 0 & & \\ 0 & 0 & \end{bmatrix} \times \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} & \\ & \\ & \end{bmatrix}$$

$$\begin{matrix} x + y + \frac{1}{2}z \\ y - \frac{1}{2}z \\ z \end{matrix} = \begin{bmatrix} & \\ & \\ & \end{bmatrix}$$

$z =$ $y =$ $x =$