









## Step 1

For Equation 2, divide Equation 1 by  $a_{11}$  and multiply by  $a_{21}$ .

$$\left[\frac{a_{21}}{a_{11}}\right](a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + \dots + a_{1n}x_n = b_1)$$

$$a_{21}x_1 + \frac{a_{21}}{a_{11}}a_{12}x_2 + \dots + \frac{a_{21}}{a_{11}}a_{1n}x_n = \frac{a_{21}}{a_{11}}b_1$$









At the end of (n-1) Forward Elimination steps, the system of equations will look like

$$a_{11}x_{1} + a_{12}x_{2} + a_{13}x_{3} + \dots + a_{1n}x_{n} = b_{1}$$

$$a_{22}x_{2} + a_{23}x_{3} + \dots + a_{2n}x_{n} = b_{2}'$$

$$a_{33}x_{3} + \dots + a_{3n}x_{n} = b_{3}''$$

$$\vdots$$

$$a_{nn}^{(n-1)}x_{n} = b_{n}^{(n-1)}$$

End of Step (n-1)







## **Back Substitution**

Start with the last equation because it has only one unknown

$$x_{n} = \frac{b_{n}^{(n-1)}}{a_{nn}^{(n-1)}}$$



