9.1

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ \ell_2 & 1 & 0 & 0 \\ 0 & \ell_3 & 1 & 0 \\ 0 & 0 & \ell_4 & 1 \end{bmatrix} \begin{bmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \end{bmatrix} = \begin{bmatrix} f_1 \\ f_2 \\ f_3 \\ f_4 \end{bmatrix}$$

$y_1 = f_1$

$\ell_2 y_1 + y_2 = f_2$ $\qquad y_2 = f_2 - \ell_2 y_1$

$\ell_3 y_2 + y_3 = f_3$ $\qquad \vdots$

$\ell_4 y_3 + y_4 = f_4$

$n = 4$,
3 SUB.'S,
3 MULT.'S,

$n-1$ SUB.'S
$n-1$ MULT.'S

} FOR FORWARD ELIM., THE OPERATION COUNT IS $O(n)$