Use elementary row or column operations to find the determinant.

$$\begin{vmatrix} 4 & -7 & 6 & 1 \\ 9 & 2 & 7 & 0 \\ 3 & 9 & -3 & 3 \\ 0 & 7 & 4 & -1 \end{vmatrix} \overset{3R_4+R_3\to R_3}{=} \begin{vmatrix} 4 & -7 & 6 & 1 \\ 9 & 2 & 7 & 0 \\ 3 & 30 & 9 & 0 \\ 0 & 7 & 4 & -1 \end{vmatrix} \overset{R_1+R_4\to R_4}{=} \begin{vmatrix} 4 & -7 & 6 & 1 \\ 9 & 2 & 7 & 0 \\ 3 & 30 & 9 & 0 \\ 4 & 0 & 10 & 0 \end{vmatrix}$$

$$= -1 \begin{vmatrix} 9 & 2 & 7 \\ 3 & 30 & 9 \\ 4 & 0 & 10 \end{vmatrix} \overset{C_2\to C_3}{=} -(-1) \begin{vmatrix} 9 & 7 & 2 \\ 3 & 9 & 30 \\ 4 & 10 & 0 \end{vmatrix} \overset{-15R_1+R_2\to R_2}{=} \begin{vmatrix} 9 & 7 & 2 \\ -132 & -96 & 0 \\ 4 & 10 & 0 \end{vmatrix} = 2 \begin{vmatrix} -132 & -96 \\ 4 & 10 \end{vmatrix}$$

$$= 2(-1320 + 384)$$

$$= 2(-936)$$

$$= \boxed{-1872}$$