EX.2.4.2.a, Sauer3

Find the $PA = LU$ factorization (using partial pivoting) of the following matrix:

$$\text{(a)} \quad \begin{pmatrix} 1 & 1 & 0 \\ 2 & 1 & -1 \\ -1 & 1 & -1 \end{pmatrix}.$$