A square matrix is called a permutation matrix if each row and each column contains exactly one entry 1, with all other entries being 0. An example is

$$P = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{bmatrix}.$$

Find the determinant of this matrix.

$\det(P) =$ [ ]

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$$P = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{bmatrix}.$$

Find the determinant of this matrix.

$\det(P) =$ 1