Step-1

The area of parallelogram with edges $(2,1),(2,3) = \begin{vmatrix} 2 & 1 \\ 2 & 3 \end{vmatrix}$

$= 6 - 2$

$= 4$ sq.units

Step-2

The area of parallelogram with edges $(2,2),(1,3)$

$= \begin{vmatrix} 2 & 2 \\ 1 & 3 \end{vmatrix}$

$= 6 - 2$

$= 4$ sq.units

Step-3

Observe that the edges of 2nd parallelogram are nothing but columns of 1st parallelogram the areas are equal since determinant of transpose of a matrix is equal to determinant of the matrix. These parallelogram look as below in figure.

Step-4