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area of polygon

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Let the vertices of a () polygon be (x_1, y_1), (x_2, y_2), ..., (x_n, y_n), enumerated in when gone round the polygon anticlockwise. The area of the polygon is equal to

$$\frac{1}{2}\left(\begin{vmatrix} x_1 & x_2 \\ y_1 & y_2 \end{vmatrix} + \begin{vmatrix} x_2 & x_3 \\ y_2 & y_3 \end{vmatrix} + \ldots + \begin{vmatrix} x_{n-1} & x_n \\ y_{n-1} & y_n \end{vmatrix} + \begin{vmatrix} x_n & x_1 \\ y_n & y_1 \end{vmatrix}\right).$$

References

[1] E. LINDELÖF: *Johdatus korkeampaan analyysiin.* Neljäs painos. Werner Söderström Osakeyhtiö, Porvoo and Helsinki (1956).