



## 5.3 Exercises

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**5-2** Consider the two-dimensional isoparametric rectangle element as shown in Figure 5.6.

(a) Write the expression for an isoparametric mapping of coordinates in this element.

(b) Determine the location of the local coordinates  $\xi$  and  $\eta$  that define the centroid of this element.

(c) Compute the expression for the Jacobian matrix  $\mathbf{J}$  of this element and evaluate the Jacobian matrix at the centroid.

(d) Compute the derivatives of the shape function  $N_3$  at the centroid.

## 5.3 Exercises

**5-2** Consider the two-dimensional isoparametric rectangle element as shown in Figure 5.6.

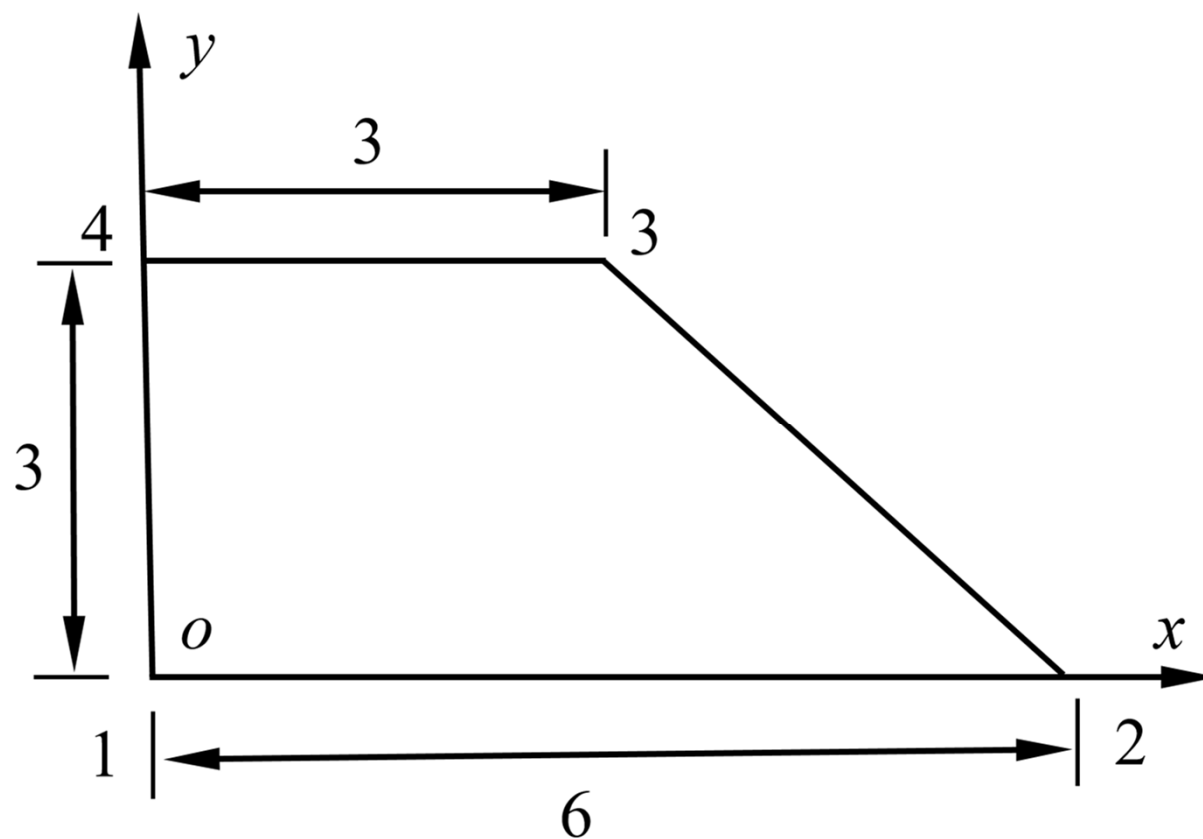


Figure 5.6 Two-dimensional rectangle element.