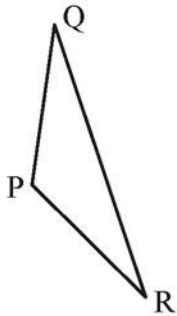


- 3 Fig. 3 shows a triangle PQR. The vector  $\overrightarrow{PQ}$  is  $\mathbf{i} + 7\mathbf{j}$  and the vector  $\overrightarrow{QR}$  is  $4\mathbf{i} - 12\mathbf{j}$ .



**Fig. 3**

- (a) Show that the triangle PQR is isosceles. [3]

The point P has position vector  $-3\mathbf{i} - \mathbf{j}$ . The point S is added so that PQRS is a parallelogram.

- (b) Find the position vector of S. [2]