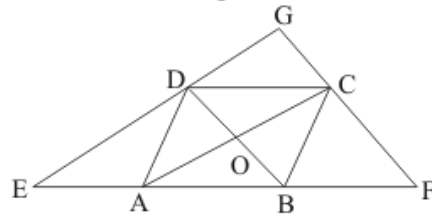




Quadrilaterals Ex 14.3 Q8

Answer :

Rhombus $ABCD$ is given:



We have

$$EA = AB = BF$$

We need to prove that $\angle EGF = 90^\circ$

We know that the diagonals of a rhombus bisect each other at right angle.

Therefore,

$$OA = OC, OB = OD, \angle AOD = \angle COD = 90^\circ$$

$$\angle AOB = \angle COB = 90^\circ$$

In $\triangle BDE$, A and O are the mid-points of BE and BD respectively.

By using mid-point theorem, we get:

$$OA \parallel DE$$

Therefore,

$$OC \parallel DG$$

In $\triangle CFA$, A and O are the mid-points of BE and BD respectively.

By using mid-point theorem, we get:

$$OA \parallel DE$$

Therefore,

$$OD \parallel GC$$

Thus, in quadrilateral DOCG, we have:

$$OC \parallel DG \text{ and } OD \parallel GC$$

Therefore, DOCG is a parallelogram.

Thus, opposite angles of a parallelogram should be equal.

$$\angle DGC = \angle DOC$$

Also, it is given that

$$\angle DOC = 90^\circ$$

Therefore,

$$\angle DGC = 90^\circ$$

Or,

$$\boxed{\angle EGF = 90^\circ}$$

Hence proved.

***** END *****

