AQA – Vectors – A2 Mathematics P2

1. June/2019/Paper_2/No.15

Four buoys on the surface of a large, calm lake are located at A, B, C and D with position vectors given by

$$\overrightarrow{OA} = \begin{bmatrix} 410 \\ 710 \end{bmatrix}, \overrightarrow{OB} = \begin{bmatrix} -210 \\ 530 \end{bmatrix}, \overrightarrow{OC} = \begin{bmatrix} -340 \\ -310 \end{bmatrix} \text{ and } \overrightarrow{OD} = \begin{bmatrix} 590 \\ -40 \end{bmatrix}$$

All values are in metres.

(a) Prove that the quadrilateral $ABCD$ is a trapezium but **not** a parallelogram.

[5 marks]

(b) A speed boat travels directly from *B* to *C* at a constant speed in 50 seconds.

Find the speed of the boat between *B* and *C*.

[4 marks]