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**2.** A transformation $T$ from the $z$-plane to the $w$-plane is given by

$$w = \frac{1}{z+1} \qquad z \neq -1$$

The imaginary axis in the $z$-plane is mapped by $T$ onto the curve $C$ in the $w$-plane.

Show that $C$ is a circle and find its centre and radius.

**(6)**

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**Question 2 continued**

**Q2**

**(Total 6 marks)**