6. The transformation T from the z-plane to the w-plane is given by

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

Given that T maps the imaginary axis in the z-plane to the circle C in the w-plane, determine

(i) the coordinates of the centre of C

(ii) the radius of C

(7)

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Question 6 continued

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Question 6 continued

(Total for Question 6 is 7 marks)