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

$$w = \frac{z - 3\mathrm{i}}{z + 2\mathrm{i}} \qquad z \neq -2\mathrm{i}$$

The circle with equation $|z| = 1$ in the z-plane is mapped by T onto the circle C in the w-plane.

Determine

(i) the centre of C,

(ii) the radius of C.

(7)

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Question 5 continued

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