Question	Scheme	Marks	AOs
1(a) (i)	$\lvert z_1 z_2 \rvert = 3\sqrt{2}$	B1	1.1b
(ii)	$\arg(z_1 z_2) = \frac{\pi}{3} + \left(-\frac{\pi}{12}\right) = \frac{\pi}{4}$ o.e.	B1	1.1b
		(2)	
(b) (i)	$n = 8$	B1ft	2.2a
(ii)	$\lvert w^n \rvert = (\text{'their} \lvert z_1 z_2 \rvert\text{'})^{\text{their } n}$	M1	1.1b
	$\lvert w^n \rvert = 104\,976$	A1	1.1b
		(3)	
			(5 marks)

Notes:

(a)

(i)

B1: Deduces $\lvert z_1 z_2 \rvert = 3\sqrt{2}$

(ii)

B1: Deduces $\arg(z_1 z_2) = \frac{\pi}{4}$ o.e

These marks may be awarded for $z_1 z_2 = 3\sqrt{2}\left(\cos\frac{\pi}{4} + \mathrm{i}\sin\frac{\pi}{4}\right)$

(b)

(i)

B1ft: 2π divided by their $\arg(z_1 z_2)$ found in part (a) (ii) to give an integer

Alternatively smallest positive integer multiple required to make their argument a multiple of 2π

(ii)

M1: Their answer to (a) (i) to the power of their *n*.

A1: 104 976