

Question 5 (Continued)

Syllabus outcomes and marking guide

(c) (i)
$$S_{\infty} = \frac{a}{1-r}$$

$$= \frac{1}{1 - (-\cot^2 x)}$$

$$= \frac{1}{1 + \cot^2 x}$$

$$= \frac{1}{\operatorname{cosec}^2 x}$$

$$= \sin^2 x$$

B3, HE7

- Gives the correct answer 1

(ii) For $\frac{\pi}{4} < x < \frac{\pi}{2}$

$$\sin \frac{\pi}{4} < \sin x < \sin \frac{\pi}{2}$$

$$\frac{1}{\sqrt{2}} < \sin x < 1$$

$$\frac{1}{2} < \sin^2 x < 1$$

B4, HE7

- Gives the correct answer 1