6 The first term of a geometric series S is $\sqrt{2}$

The second term of S is $\sqrt{2} - 2$

(a) (i) Find the exact value of the common ratio of S.

(ii) Find the third term of S, giving your answer in the form $a\sqrt{2} + b$, where a and b are integers.

(5)

(b) (i) Explain why the series is convergent.

(ii) Find the sum to infinity of S.

(3)

Question 6 continued

(Total for Question 6 is 8 marks)