

10 (a) Show that

$$\frac{1}{\sqrt{k} + \sqrt{k+1}} \equiv \sqrt{k+1} - \sqrt{k} \quad k > 0$$

[2 marks]

10 (b) Using the result from part (a) find the exact value of

$$\frac{1}{\sqrt{1} + \sqrt{2}} + \frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{4}}$$

Fully justify your answer.

[2 marks]