| Question number | Scheme | Marks |
|---|---|---|
| 3(a)(i) | $\frac{ar^4}{ar} = \frac{\frac{135}{1024}}{\frac{5}{16}}$ | M1 |
| | $r = \sqrt[3]{\frac{\frac{135}{1024}}{\frac{5}{16}}} = \left(\sqrt[3]{\frac{135\times16}{5\times1024}}\right) = ...$ | M1 |
| | $r = \frac{3}{4}$ oe | A1 |
| (a)(ii) | $ar = \frac{5}{16} \Rightarrow a = \frac{\frac{5}{16}}{\frac{3}{4}} = \left(\frac{5}{12}\right)$ | M1 |
| | $a = \frac{5}{12}$ | A1 |
| | | [5] |
| (b) | $S = \frac{\frac{5}{12}}{1-\frac{3}{4}} = ...$ | M1 |
| | $S = \frac{5}{3}$ | A1 |
| | | [2] |
| | | **Total 7 marks** |

| Part | Mark | Notes |
|---|---|---|
| **(a)(i)** | **M1** | For $\frac{ar^4}{ar} = \frac{\frac{135}{1024}}{\frac{5}{16}}$ or $\frac{ar}{ar^4} = \frac{\frac{5}{16}}{\frac{135}{1024}}$ |
| | **M1** | For rearranging to find a value for $r$<br>$r = \sqrt[3]{\frac{\frac{135}{1024}}{\frac{5}{16}}} = \left(\sqrt[3]{\frac{135\times16}{5\times1024}}\right) = ...$ |
| | **A1** | For the correct value of $r = \frac{3}{4}$ oe |
| **(a)(ii)** | **M1** | For attempting to find a value for $a$ using their $r$<br>$ar = \frac{5}{16} \Rightarrow a = \frac{\frac{5}{16}}{\frac{3}{4}} = \left(\frac{5}{12}\right)$ |
| | **A1** | For the correct value of $a = \frac{5}{12}$ |

| | | |
|---|---|---|
| **(b)** | **M1** | For using the correct formula for the sum to infinity using their $a$ and $r$ provided $\|r\| < 1$<br>$S = \frac{'\frac{5}{12}'}{1-'\frac{3}{4}'} = ...$<br>$\frac{'5'}{12} \neq \frac{5}{16}$ , $\frac{'5'}{12} \neq \frac{135}{1024}$ |
| | **A1** | For the correct value of $S = \frac{5}{3}$<br>**Note:** Must be the exact value. |