<table>
<tr><th>Q</th><th>Marking instructions</th><th>AO</th><th>Marks</th><th>Typical solution</th></tr>
<tr><td rowspan="2">5</td><td>Selects and begins to use a suitable method of proof.
Exhaustion:
Must check at least two correct values for n in the range $0 \le n < 4$ and make at least two correct comparisons. Comparisons are implied by ticks/crosses or use of true/false
Direct proof:
Takes logs to any base of both sides and uses a law of logs correctly once
Contradiction:
Must be clear they are attempting contradiction with
“$0 \le n < 4$ and $2^{n+2} \le 3^n$”
assumed explicitly.
Condone strict inequality</td><td>3.1a</td><td>M1</td><td rowspan="2"><table>
<tr><td>n</td><td>2^{n+2}</td><td>3^n</td><td></td></tr>
<tr><td>0</td><td>4</td><td>1</td><td>$4>1$</td></tr>
<tr><td>1</td><td>8</td><td>3</td><td>$8>3$</td></tr>
<tr><td>2</td><td>16</td><td>9</td><td>$16>9$</td></tr>
<tr><td>3</td><td>32</td><td>27</td><td>$32>27$</td></tr>
</table>
Hence $2^{n+2} > 3^n$ for integer values of n such that $0 \le n < 4$</td></tr>
<tr><td>Completes a reasoned mathematical
argument, proving $2^{n+2} > 3^n$ when n is an integer and
$0 \le n < 4$. Must include a fully correct concluding statement which refers to ‘integer’ or lists the four integers
If using direct proof or contradiction they must use the laws of logs correctly to remove n from the exponent. Condone use of equality if direct proof used</td><td>2.1</td><td>R1</td></tr>
<tr><td></td><td align="right">Total</td><td></td><td>2</td><td></td></tr>
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