

Solutions

Accept equivalent correct methods and supported interpretations. The marks check reasoning; they are not an official grade.

2.1 **D** – $5+3 \cdot 4=17$. A counts four increments instead of three; B gives the second term; C multiplies initial value by term number instead of adding the common difference.

Correct response linked to the given case.

2.2 **A** – $3^4=81$. B gives the logarithm's base; C divides 81 by 3 once; D is not the exponent producing 81 from base 3.

Correct response linked to the given case.

2.3 **26** – Add the three terms; 18 alone is the last term.

Correct response linked to the given case.

2.4 **False** – The product rule concerns ab , not $a+b$.

Correct response linked to the given case.

3.1 Constant difference is 4 seats per row. $a_8 = a_1 + 7d = 12 + 7(4) = 40$ seats. $S_8 = 8(a_1 + a_8)/2 = 8(12 + 40)/2 = 208$ seats. This assumes the same four-seat increment through all eight rows.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence
. Accurate conditions, checks or qualification.

3.2 $a_5 = a_1 r^4 = 5(3)^4 = 405$. $S_5 = a_1(1 - r^5)/(1 - r) = 5(1 - 243)/(1 - 3) = 605$. When $r = 1$, the fraction has zero denominator and the correct sum is na_1 , here 25 for five identical terms.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.

3.3 The domain requires $x > 3$. Exponential form gives $x - 3 = 32$, so $x = 35$ and the argument is positive. The sum of logs corresponds to the product $3x$, not $x + 3$; at $x = 1$, the proposed equality would equate 2 with $\log_2 3$.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.

3.4 $N(t) = 120(1.5)^{t/2}$ cells. $N(4) = 120(1.5)^2 = 270$ cells. The growth is 50% per two hours, not 150%; the four-hour factor is 2.25. The hourly factor would be $\sqrt{1.5}$.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.