Finite geometric sums

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Find the sum of eight terms of $5, 10, 20, \ldots$. [2 marks]

$5(2^8 - 1) = 1275.$

Answer: $1275.$

2. Find $16 + 8 + 4 + 2 + 1 + \frac{1}{2}$. [2 marks]

$\frac{16(1 - 2^{-6})}{1 - \frac{1}{2}} = \frac{63}{2}.$

Answer: $\frac{63}{2}.$

3. Find the seven-term sum when $a = 4, r = 1$. [2 marks]

Seven equal terms total $7(4) = 28.$

Answer: $28.$

4. Find $2 - 6 + 18 - 54 + 162$. [2 marks]

$\frac{2[1 - (-3)^5]}{4} = 122.$

Answer: $122.$

5. For $a = 7, r = 2$, find the least n with $S_n > 1000$. [2 marks]

$S_7 = 889$ and $S_8 = 1785.$

Answer: $8.$

6. Find the balance immediately after three end-of-year AUD 500 deposits earning 4% yearly. [3 marks]

$500[(1.04)^2 + 1.04 + 1] = 1560.8.$

Answer: $1560.80.$