Arithmetic sequences

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Find d, u_{12} for $-4, 3, 10, \ldots$. [2 marks]

$3-(-4)=7;\ -4+11(7)=73.$

Answer: $d=7, u_{12}=73.$

2. Find a when $u_8=31, d=4$. [2 marks]

$a+7(4)=31.$

Answer: $3.$

3. An arithmetic sequence has $u_3=14, u_9=38$. Find u_{20}. [2 marks]

$6d=24$ gives $d=4;\ a=6;\ 6+19(4)=82.$

Answer: $82.$

4. Is 104 a term of $5, 11, 17, \ldots$? [2 marks]

$u_n=6n-1$; setting it to 104 gives $n=17.5.$

Answer: No.

5. Insert three arithmetic means between 6 and 26. [2 marks]

Four equal intervals have size $\frac{26-6}{4}=5.$

Answer: $11, 16, 21.$

6. Row 1 needs 9 tiles; each later row needs 4 more. Which row first needs more than 100? [3 marks]

$9+4(n-1)>100$ gives $n>23.75.$

Answer: Row 24.