## HAT Recursive to Explicit, Explicit to Recursive!

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For each sequence:

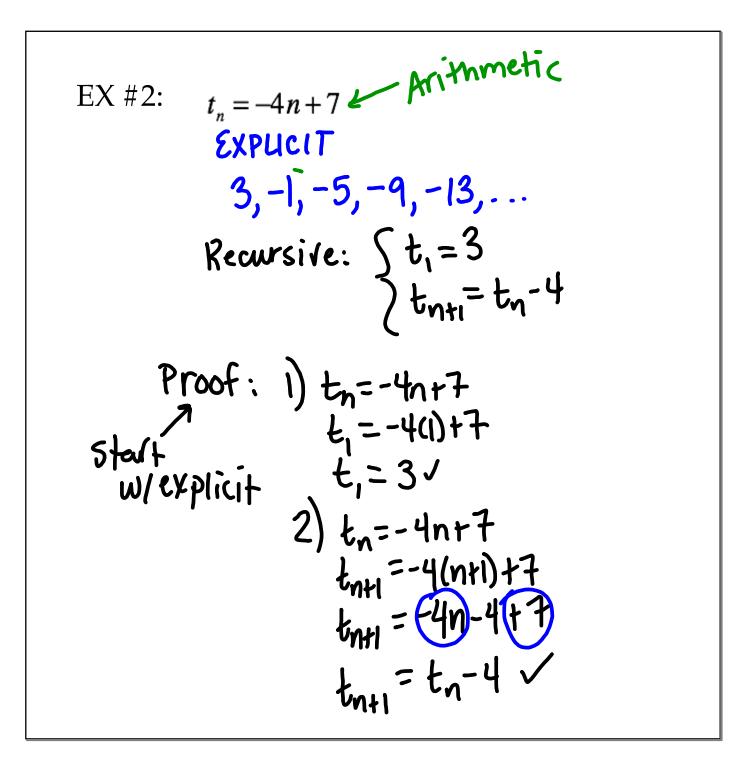
Write the first 4 terms.

If the formula is explicit, write the recursive formula.

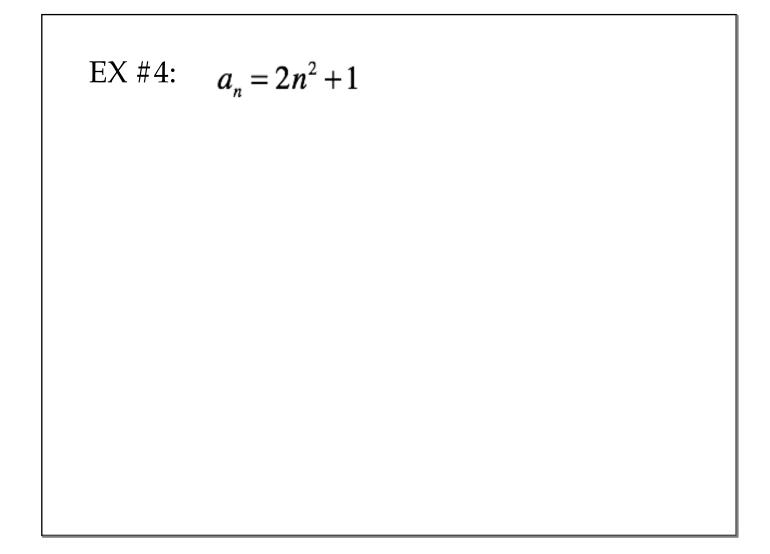
If the formula is recursive, write the explicit formula.

Prove that the formulas are equivalent by starting with the explicit formula.

EX #1: 
$$\begin{cases} t_{1} = -23 \\ t_{n+1} = t_{n} \notin 8 \\ \leftarrow Arimmetic \\ -23, -15, -7, 1, 9, ... \\ t_{n} = -23 + 8(n-1) \\ t_{n} = -31 + 8n \\ PROOF: i) t_{1} = -31 + 8(i) \\ t_{1} = -23 \\ \checkmark \end{cases}$$
2) 
$$t_{n} = -31 + 8n \\ t_{n+1} = -31 + 8(n+1) \\ t_{n+1} = -31 + 8(n+1) \\ t_{n+1} = -31 + 8n \\ + n \\ t_{n+1} = t_{n} + 8 \\ \checkmark \end{cases}$$



EX #3: 
$$\begin{cases} t_{1} = 3 & \text{Geometric} \\ t_{n+1} = t_{n} \cdot 4 \\ 3, 12, 48, 192, 768, ... \\ \text{Explicit:} \\ t_{n} = 3(4)^{n-1} \\ t_{n} = 3(4)^{n-1} \\ t_{1} = 3(4)^{n-1} \\ t_{1} = 3\sqrt{2} \\ t_{n} = 3(4)^{n-1} \\ t_{nn} = 3(4)^{n-1+1} \\ t_{nn} = 3(4)^{n-1+1} \\ t_{nn1} = 3(4)^{n-1+1} \\ t_{nn1} = 4n \cdot 4\sqrt{2} \end{cases}$$



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