## Further Maths GCSE Sequences Answers

$$
\begin{aligned}
& \text { 1. } \quad n^{2}-6 n+14=(n-3)^{2}+5 \\
& \text { suice all squar numbus are } \geqslant 0 \\
& \text { tha }(n-3)^{2}+5>0
\end{aligned}
$$

2. $n^{2}+n \quad n 12345678910$

$$
n^{2}+n \quad 2612203042567290 \quad 110
$$

watd yield the result if contvided.

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\sigma. }\mp@subsup{n}{}{\mathrm{ th}}\mathrm{ torm = n'2}+
    (n+1\mp@subsup{)}{}{\mathrm{ th}}\mathrm{ torm }=(n+1\mp@subsup{)}{}{2}+(n+1)=\mp@subsup{n}{}{2}+3n+2
    ( n + 1 ) ^ { \text { th} } \text { tum - nth} \text { tom } = ( n ^ { 2 } + 3 n + 2 ) - ( n ^ { 2 } + n ) = 2 n + 2
        so }2n+2=32=>n=15
    so }\mp@subsup{n}{}{2}+n=24
        (n+1\mp@subsup{)}{}{2}+(n+1)=272
```


6.

$$
\begin{aligned}
& n^{\text {tt }} \text { tum }=\frac{10 n-2}{3} \\
& n=1 \quad \frac{10-2}{3}=4 a \quad \Rightarrow-8=12 a \Rightarrow a=2 / 3 . \\
& n=2 \quad \frac{20-2}{3}=9 a \quad \Rightarrow 18=27 a \Rightarrow a=2 / 3 .
\end{aligned}
$$

7. $n=7 \quad \frac{2 n^{2}+7}{3 n^{2}-2}=\frac{105}{145}=\frac{21}{29}$.
8. $\operatorname{as} n \rightarrow \infty \frac{2 n^{2}+7}{3 n^{2}-2} \rightarrow \frac{2 n^{2}}{3 n^{2}}=\frac{2}{3}$
slice the 7 ard 2 become insignificat.
9. 

$$
\begin{aligned}
n^{\text {th }} \text { tom } & =5 n-3 . \\
\text { Delo sequace } & =(5 n-3)^{2}+1 \\
& =25 n^{2}-30 n+10 \\
& =5\left(5 n^{2}-6 n+2\right)
\end{aligned}
$$

Herce a moltipk of 5 .

