We are first given that:

$$
\begin{aligned}
& x_{1}=2^{2}+3^{2}+6^{2} \\
& x_{2}=3^{2}+4^{2}+12^{2} \\
& x_{3}=4^{2}+5^{2}+20^{2}
\end{aligned}
$$

Then show that $x_{n}$ is always a perfect square.

