Zadanie 34

$S_{11} = 187 \Rightarrow \frac{2a_1 + 10r}{2} \cdot 11 = 187 \Rightarrow$

$2a_1 + 10r = 34 \Rightarrow \underline{a_1 + 5r = 17}$ (1)

$\frac{a_1 + a_3 + a_9}{3} = 12 \Rightarrow a_1 + a_1 + 2r + a_1 + 8r = 36 \Rightarrow$

$\underline{3a_1 + 10r = 36}$ (2)

$\frac{a_3}{a_1} = \frac{a_k}{a_3} \Rightarrow \frac{a_1 + 2r}{a_1} = \frac{a_1 + (k-1) \cdot r}{a_1 + 2r}$ (3)

Rozwiązuję układ (1) (2)

$\begin{cases} a_1 + 5r = 17 \quad | \cdot (-2) \\ 3a_1 + 10r = 36 \end{cases} \Rightarrow \underline{\begin{cases} -2a_1 - 10r = -34 \\ 3a_1 + 10r = 36 \end{cases}}$

$\Rightarrow \begin{cases} a_1 = 2 \\ r = 3 \end{cases}$

Podstawiam a_1 i r do (3)

$$\frac{2+6}{2} = \frac{2 + (k-1) \cdot 3}{2+6}$$

$$k = 11$$

Odpowiedź: Wskazana liczba spełnia $k = 11$