

$$\begin{aligned}n &= 10s+5 \\ n &= 10s+6 \\ n &= 10s+7 \\ n &= 10s+8 \\ n &= 10s+9\end{aligned}$$

$$\begin{aligned}n+1 &= 10s+6 \\ n+1 &= 10s+7 \\ n+1 &= 10s+8 \\ n+1 &= 10s+9 \\ n+1 &= 10s+10\end{aligned}$$

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Taking each case in turn.

$$\textcircled{1} n(n+1) = 10s(10s+1) = 10(10s^2+s)$$

$$\text{so } k = 10s^2 + s, r = 0$$

$$\textcircled{2} n(n+1) = (10s+1)(10s+2) = 100s^2 + 30s + 2$$

$$= 10(10s^2 + 3s) + 2$$

$$\text{so } k = 10s^2 + 3s, r = 2$$

$$\textcircled{3} n(n+1) = (10s+2)(10s+3) = 100s^2 + 50s + 6$$

$$= 10(10s^2 + 5s) + 6$$

$$\text{so } k = 10s^2 + 5s, r = 6$$

$$\textcircled{4} n(n+1) = (10s+3)(10s+4) = 100s^2 + 70s + 12$$

$$= 10(10s^2 + 7s + 1) + 2$$

$$\text{so } k = 10s^2 + 7s + 1, r = 2$$

$$\textcircled{5} n(n+1) = (10s+4)(10s+5) = 100s^2 + 90s + 20$$

$$= 10(10s^2 + 9s + 2)$$

$$\text{so } k = 10s^2 + 9s + 2, r = 0$$

$$\textcircled{6} n(n+1) = (10s+5)(10s+6) = 100s^2 + 110s + 30$$

$$= 10(10s^2 + 11s + 3)$$

$$\text{so } k = 10s^2 + 11s + 3, r = 0$$

$$\textcircled{7} n(n+1) = (10s+6)(10s+7) = 100s^2 + 130s + 42$$

$$= 10(10s^2 + 13s + 4) + 2$$

$$\text{so } k = 10s^2 + 13s + 4, r = 2$$

$$\textcircled{8} n(n+1) = (10s+7)(10s+8) = 100s^2 + 150s + 56$$

$$= 10(10s^2 + 15s + 5) + 6$$

$$\text{so } k = 10s^2 + 15s + 5, r = 6$$

$$\textcircled{9} n(n+1) = (10s+8)(10s+9) = 100s^2 + 170s + 72$$

$$= 10(10s^2 + 17s + 7) + 2$$

$$\text{so } k = 10s^2 + 17s + 7, r = 2$$

$$\textcircled{10} n(n+1) = (10s+9)(10s+10) = 100s^2 + 190s + 90$$

$$= 10(10s^2 + 19s + 9)$$