

Question	Scheme	Marks	AOs
<b>3(a)</b>	$(5r - 2)^2 = 25r^2 - 20r + 4$	B1	1.1b
	$\sum_{r=1}^n 25r^2 - 20r + 4 = \frac{25}{6}n(n+1)(2n+1) - \frac{20}{2}n(n+1) + \dots$	M1	2.1
	$= \frac{25}{6}n(n+1)(2n+1) - \frac{20}{2}n(n+1) + 4n$	A1	1.1b
	$= \frac{1}{6}n[25(2n^2 + 3n + 1) - 60(n+1) + 24]$	dM1	1.1b
	$= \frac{1}{6}n[50n^2 + 15n - 11]$	A1	1.1b
		<b>(5)</b>	
<b>(b)</b>	$\frac{1}{6}k[50k^2 + 15k - 11] = 94k^2$	M1	1.1b
	$50k^3 - 549k^2 - 11k = 0$ or $50k^2 - 549k - 11 = 0$	A1	1.1b
	$(k - 11)(50k + 1) = 0 \Rightarrow k = \dots$	M1	1.1b
	$k = 11(\text{only})$	A1	2.3
		<b>(4)</b>	

**(9 marks)**

### Notes

(a)

B1: Correct expansion

M1: Substitutes at least one of the standard formulae into their expanded expression

A1: Fully correct expression

dM1: Attempts to factorise  $\frac{1}{6}n$  having used at least one standard formula correctly. Dependent on the first M mark.

A1: Obtains the correct expression or the correct values of  $a$ ,  $b$  and  $c$

(b)

M1: Uses their result from part (a) and sets equal to  $94k^2$  and attempt to expand and collect terms.

A1: Correct cubic or quadratic

M1: Attempts to solve their 3TQ or cubic equation

A1: Identifies the correct value of  $k$  with no other values offered