Question	Scheme	Marks
1(a)	$A=\frac{1}{9}$	B1
		(1)
(b)	$"3^{-2}"(1+\underline{(-2)(\frac{kx}{3})}+\underline{\frac{(-2)(-3)}{2}(\frac{kx}{3})^2}+...)$ or x: $3^{-2}(-2)\left(\frac{k}{3}\right)\left(=-\frac{2k}{27}\right)$ and x^2: $3^{-2}\frac{(-2)(-3)}{2}\left(\frac{k}{3}\right)^2=\frac{k^2}{27}$	B1
	$\frac{(-2)(-3)}{2}\left(\frac{k}{3}\right)^2=3\times(-2)\left(\frac{k}{3}\right)\Rightarrow ...k^2=...k$	M1
	$k^2+6k=0$ *	A1*
		(3)
(c)(i)	$k=-6$	B1
(ii)	$3^{-2}\frac{(-2)(-3)(-4)}{3!}\left(\frac{"-6"}{3}\right)^3=\frac{32}{9}$	M1A1
		(3)
		(7 marks)

Notes

Mark parts (a) and (b) as a whole.

(a)

B1: $A=\frac{1}{9}$

(b)

B1: Correct unsimplified coefficients for *x* and x^2 either in an expansion or separate for $(3+kx)^{-2}$ or for $\left(1+\frac{k}{3}\right)^{-2}$ (accept the 3^{-2} missing or incorrect). May be implied. Accept $B=-\frac{2k}{3}$ and $C=\frac{k^2}{3}$ if they forget the multiple outside. B0 if brackets on $\left(\frac{k}{3}\right)^2$ missing unless implied by recovery.

M1: Sets their coefficient of x^2 equal to 3 times their coefficient of *x* to produce a two term quadratic equation in terms of *k*.

A1*: Achieves given answer from a correct equation, but condone if *B* and *C* both missed the 3^{-2}. May be scored if *A* was incorrect.

(c)(i)

B1: $k=-6$ only. The *k* = 0 solution must be rejected.

(ii)

M1: Substitutes their non-zero value for *k* into a correct expression for the coefficient of x^3. Must include the 3^{-2}

A1: $\frac{32}{9}$ oe