Question Number	Scheme	Marks
1(a)	$\left(\frac{1}{4}-\frac{1}{2}x\right)^{-\frac{3}{2}}=8(1-2x)^{-\frac{3}{2}}$	B1
	$(1-2x)^{-\frac{3}{2}}=1+\left(-\frac{3}{2}\right)(-2x)+\frac{-\frac{3}{2}\left(-\frac{3}{2}-1\right)}{2!}(-2x)^2+\frac{-\frac{3}{2}\left(-\frac{3}{2}-1\right)\left(-\frac{3}{2}-2\right)}{3!}(-2x)^3+...$	M1 A1
	$\left(\frac{1}{4}-\frac{1}{2}x\right)^{-\frac{3}{2}}=8+24x+60x^2+140x^3+...$	A1, A1
		(5)
(b)	$n = 2$	B1
		(1)
(c)	$\left(\frac{1}{4}-\frac{1}{2}x\right)^2=\frac{1}{16}-\frac{1}{4}x+\frac{1}{4}x^2$	B1
	$\left(\frac{1}{4}-\frac{1}{2}x\right)^{\frac{1}{2}}=\left(\frac{1}{16}-\frac{1}{4}x+\frac{1}{4}x^2\right)\left(8+24x+60x^2+140x^3+...\right)$ $=8\times\frac{1}{16}+24x\times\frac{1}{16}+60x^2\times\frac{1}{16}-8\times\frac{1}{4}x-24x\times\frac{1}{4}x+8\times\frac{1}{4}x^2$	M1
	$=\frac{1}{2}-\frac{1}{2}x-\frac{1}{4}x^2+...$	A1
		(3)
		Total 9

(a)

B1: Takes out the **correct and simplified** common factor to obtain $8(1\pm...)^{-\frac{3}{2}}$ Implied by an expansion 8 + ...

M1: Attempts the binomial expansion of $(1\pm kx)^{-\frac{3}{2}}$ to get the third and/or fourth term with an acceptable structure.

The correct binomial coefficient must be combined with the correct power of *x*.

Look for $\frac{-\frac{3}{2}\left(-\frac{3}{2}-1\right)}{2!}(\pm kx)^2$ or $\frac{-\frac{3}{2}\left(-\frac{3}{2}-1\right)\left(-\frac{3}{2}-2\right)}{3!}(\pm kx)^3$ with or without the brackets on the kx

Even allow with $k=1$

A1: Correct simplified or unsimplified expansion for $(1-2x)^{-\frac{3}{2}}$. (NB simplified is $1+3x+\frac{15}{2}x^2+\frac{35}{2}x^3+...$)

A1: Two correct and simplified terms of $8+24x+60x^2+140x^3$

A1: All correct and simplified $8+24x+60x^2+140x^3$ Ignore extra terms of x^4 and above

(b)

B1: Correct value, *n* = 2. Do NOT allow incomplete answers such as $\frac{4}{2}$

(c) **Hence**

B1: Correct expansion of $\left(\frac{1}{4}-\frac{1}{2}x\right)^2$, simplified or unsimplified

M1: Attempts correct strategy to find expansion.

Terms do not need to be collected. There may be other terms as well, for example terms in x^3

Look for an attempt to find 4 or more terms from the following (condoning slips)

$\left(A+Bx+Cx^2\right)\left(E+Fx+Gx^2+Hx^3+...\right)=AE+AFx+AGx^2+BEx+BFx^2+CEx^2+...$

A1: Correct simplified expansion. Ignore extra terms of x^3 and above