Question number	Scheme	Marks
9(a)	$(3(3-x)^{-3} = \frac{1}{9}\left(1-\frac{x}{3}\right)^{-3})$ $a = \frac{1}{9}$ $b = \frac{1}{3}$	B1 B1 [2]
(b)	$\left(1-\frac{x}{3}\right)^{-3} =$ $\left[1+(-3)\left(-\frac{x}{3}\right)+\dfrac{(-3)(-4)\left(-\frac{x}{3}\right)^{2}}{2!}+\dfrac{(-3)(-4)(-5)\left(-\frac{x}{3}\right)^{3}}{3!} \right]$	M1 A1ft
	$\dfrac{1}{9}+\dfrac{1}{9}x+\dfrac{2}{27}x^{2}+\dfrac{10}{243}x^{3}$	A1 [3]
(c) (i)	$\frac{24}{125} = \frac{3}{(3-x)^{3}}$ or $\frac{125}{8} = (3-x)^{3}$ $\Rightarrow \frac{5}{2} = 3-x$	B1
	$x = 0.5$ oe $\dfrac{1}{9}+\dfrac{1}{9}("0.5")+\dfrac{2}{27}("0.5")^{2}+\dfrac{10}{243}("0.5")^{3}$ $(=0.19033)$	B1ft
(ii)	$\pm\left(\dfrac{\frac{24}{125}-"0.19033"}{\frac{24}{125}}[\times 100]\right)$ oe	M1
	0.87% or -0.87%	A1 [4]
		Total 9 marks

Part	Mark	Additional Guidance
(a)	B1	Correct a, can be left embedded
	B1	Correct b, can be left embedded
(b)	M1	An attempt to use the binomial expansion for their $(1-bx)^{-3}$ The minimally acceptable attempt is as follows: • The power of x must be correct in each term. • The first term is 1 (or "$\frac{1}{9}$" $\times$ 1 ...) • The 2!, 3! are correct (may be unevaluated) • Their "$-\frac{x}{3}$" must appear in at least one term of the expansion. a does not need to be present to attain this mark.
	A1ft	Any two (unsimplified) algebraic terms fully correct in their expansion. Follow through their value for b. a does not need to be present to attain this mark.
	A1	Fully simplified correct expression.
Mark parts (i) and (ii) together. If you see $\frac{24}{125} = 8 \times \frac{3}{125}$ leading to $x = -2$ for part (c) then send to review.		
(c) (i)	B1	Correct identification of $x = 0.5$.
	B1ft	Correct use of their value of x in their expansion. If their x and / or their expansion is incorrect then must show the substitution.
(ii)	M1	Uses the correct formula, with their value from part (i) to calculate a percentage error.
	A1	0.87% or -0.87% Awrt 0.87% or awrt -0.87%