Question	Scheme	Marks	AOs
6(a)	$A=5$	B1	2.2a
	$\left(1-\frac{3}{4}x\right)^{-\frac{1}{2}}\approx$ $1+\left(-\tfrac{1}{2}\right)\left(-\tfrac{3}{4}x\right)+\frac{\left(-\tfrac{1}{2}\right)\left(-\tfrac{3}{2}\right)}{2!}\left(-\tfrac{3}{4}x\right)^2+\frac{\left(-\tfrac{1}{2}\right)\left(-\tfrac{3}{2}\right)\left(-\tfrac{5}{2}\right)}{3!}\left(-\tfrac{3}{4}x\right)^3$	M1 A1	1.1b 1.1b
	$\frac{10}{\sqrt{4-3x}}\approx 5+\frac{15}{8}x+\frac{135}{128}x^2+\frac{675}{1024}x^3$	A1	1.1b
		(4)	
(b)	$k=\frac{4}{3}$	B1	2.2a
		(1)	
(c)	$x=\frac{1}{3}\Rightarrow 5+\frac{15}{8}\left(\frac{1}{3}\right)+\frac{135}{128}\left(\frac{1}{3}\right)^2+\frac{675}{1024}\left(\frac{1}{3}\right)^3=\frac{5905}{1024}$ $x=\frac{1}{3}\Rightarrow\frac{10}{\sqrt{4-3x}}=\frac{10}{\sqrt{3}}\Rightarrow\sqrt{3}\approx 10\div\frac{5905}{1024}$ or $\sqrt{3}\approx\frac{3}{10}\times\frac{5905}{1024}=\ldots$	M1	1.1b
	$\Rightarrow\sqrt{3}\approx\frac{2048}{1181}$ or $\frac{3543}{2048}$	A1	2.2a
		(2)	
		(7 marks)	

Notes

(a)

B1: For deducing that $A = 5$. This may be seen as part of their final answer or as e.g.

$\frac{10}{\sqrt{4-3x}}=\frac{10}{2\sqrt{1-\ldots}}$ or $\frac{10}{\sqrt{4-3x}}=10\times\frac{1}{2}(1-\ldots)$

M1: Uses a correct binomial expansion of their $(1\pm\ldots x)^n$

A1: Correct unsimplified expansion

A1: All correct

Note direct expansion gives:

$$10(4-3x)^{-\frac{1}{2}}\approx 10\left(4^{-\frac{1}{2}}+\left(-\frac{1}{2}\right)\left(4^{-\frac{3}{2}}\right)(-3x)+\left(\frac{-\frac{1}{2}\times-\frac{3}{2}}{2}\right)\left(4^{-\frac{5}{2}}\right)(-3x)^2++\left(\frac{-\frac{1}{2}\times-\frac{3}{2}\times-\frac{5}{2}}{6}\right)\left(4^{-\frac{7}{2}}\right)(-3x)^3\right)$$

Score B1 for "5", M1 for correct structure of the expansion, A1 for correct unsimplified terms and A1 as above

(b)

B1: Deduces the correct value

(c)

M1: Fully correct strategy: Substitutes $x=\frac{1}{3}$ into their expansion and divides into 10 or multiplies by $\frac{3}{10}$

A1: Deduces either value (oe)