Question	Scheme	Marks	AOs
6	$\left\{(2+kx)^{-4} = 2^{-4}\left(1+\frac{kx}{2}\right)^{-4} = \frac{1}{16}\left(1+(-4)\left(\frac{kx}{2}\right)+\frac{(-4)(-5)}{2!}\left(\frac{kx}{2}\right)^2+...\right)\right\}$		
(a)	For the x^2 term: $\left(\frac{1}{16}\right)\frac{(-4)(-5)}{2!}\left(\frac{k}{2}\right)^2 \quad \left\{= \frac{5}{32}k^2\right\}$	M1	1.1b
		A1	1.1b
	$\frac{1}{16}\frac{(-4)(-5)}{2!}\left(\frac{k}{2}\right)^2 = \frac{125}{32} \Rightarrow \frac{5}{32}k^2 = \frac{125}{32} \Rightarrow k^2 = 25 \Rightarrow k = ... \Rightarrow A = ...$	dM1	3.1a
	$\left\{A = -\frac{4}{32}k \Rightarrow\right\} \; A = -\frac{4}{32}(5)$	M1	2.2a
	$A = -\frac{5}{8}$ or -0.625	A1	1.1b
		(5)	
(b)	$\mathrm{f}(x)$ is valid when $\left\lvert\frac{kx}{2}\right\rvert < 1 \Rightarrow \left\lvert\frac{5x}{2}\right\rvert < 1 \Rightarrow \lvert x\rvert < \frac{2}{5}$		
	E.g. • As $x = \frac{1}{10}$ lies in the interval $\lvert x\rvert < \frac{2}{5}$, the binomial expansion is valid • As $\left\lvert\left(\frac{5}{2}\right)\left(\frac{1}{10}\right)\right\rvert = \frac{1}{4} < 1$, the binomial expansion is valid	B1ft	2.3
		(1)	
		(6 marks)	

Question 6 Notes:

(a)	
M1:	For either $\frac{(-4)(-5)}{2!}$ or $\left(\frac{k}{2}\right)^2$ or $\left(\frac{kx}{2}\right)^2$ or $\frac{(-4)(-5)}{2}$ or 10 as part of their x^2 coefficient
A1:	For $\left(\frac{1}{16}\right)\frac{(-4)(-5)}{2!}\left(\frac{k}{2}\right)^2$ or $\frac{5}{32}k^2$ or equivalent as part of their x^2 coefficient
dM1:	**dependent on the previous M mark** A complete strategy to find a value for *k* and use their *k* to find a value for *A*
M1:	Deduces and applies $A = -\frac{4}{32}(\text{their } k)$ or $A = -\frac{1}{8}(\text{their } k)$
A1:	$A = -\frac{5}{8}$ or -0.625
(b)	
B1ft:	See scheme **Note:** Allow follow through for applying either $\lvert x\rvert < \frac{2}{\text{their } k}$ or $\left\lvert\left(\frac{\text{their } k}{2}\right)\left(\frac{1}{10}\right)\right\rvert$