Question Number	Scheme	Marks
6(a)	$m^2-6m+8=0$	
	$(m-2)(m-4)=0,\ m=2,4$	M1
	$(\text{CF}=)\quad Ae^{2x}+Be^{4x}$	A1
	PI: $y=\lambda x^2+\mu x+\nu$	B1
	$y'=2\lambda x+\mu \quad y''=2\lambda$	
	$2\lambda-6(2\lambda x+\mu)+8(\lambda x^2+\mu x+\nu)=2x^2+x$	M1
	$\lambda=\frac{1}{4},\ -12\lambda+8\mu=1,\ \ 2\lambda-6\mu+8\nu=0$	M1
	$\lambda=\frac{1}{4},\ \mu=\frac{1}{2},\ \nu=\frac{5}{16}$	A1A1
	$y=Ae^{2x}+Be^{4x}+\frac{1}{4}x^2+\frac{1}{2}x+\frac{5}{16}$	A1ft (8)
(a)M1	Form aux equation and attempt to solve (any valid method). Equation need not be shown if CF is correct or complete solution $(m=2,4)$ is shown	
A1	Correct CF $y=..$ not needed.	
B1	Correct form for PI	
M1	Their PI (minimum 2 terms) differentiated twice and substituted in the equation	
M1	Coefficients equated	
A1	Any 2 values correct	
A1	All 3 values correct	
A1ft	A complete solution, follow through their CF and PI. All 3 M marks must have been earned. Must start $y=...$	
6(b)	$y=Ae^{2x}+Be^{4x}+\frac{1}{4}x^2+\frac{1}{2}x+\frac{5}{16}$	
	$1=A+B+\frac{5}{16}$	M1
	$\frac{dy}{dx}=2Ae^{2x}+4Be^{4x}+\frac{1}{2}x+\frac{1}{2} \qquad 0=2A+4B+\frac{1}{2}$	M1
	$A=\frac{13}{8}\quad B=-\frac{15}{16}$ oe	dM1A1
	$y=\frac{13}{8}e^{2x}-\frac{15}{16}e^{4x}+\frac{1}{4}x^2+\frac{1}{2}x+\frac{5}{16}$ oe	A1ft (5) [13]
(b)		
M1	Substitute $y=1$ and $x=0$ in their complete solution from (a)	
M1	Differentiate and substitute $\frac{dy}{dx}=0$, $x=0$	
dM1	Solve the 2 equations to $A=...$ or $B=....$ Depends on the two previous M marks	
A1	Both values correct	
A1ft	Particular solution, follow through their general solution and A and B. Must start $y=...$	