Question	Answer	Marks	Partial Marks
1	$\frac{dy}{dx} = \cos x - e^{-x}$	**B2**	**B1** for $\cos x$ or $-e^{-x}$
	$\delta y = their \left.\frac{dy}{dx}\right\|_{x=\frac{\pi}{4}} \times h$	**M1**	
	$0.251h$	**A1**	
2	Squares: $(1-\sqrt{5})^2 = 1-\sqrt{5}-\sqrt{5}+5$	**B1**	or rationalises $\frac{10+2\sqrt{5}}{(1-\sqrt{5})^2} \times \frac{(1+\sqrt{5})^2}{(1+\sqrt{5})^2}$
	Rationalises, e.g. $\frac{10+2\sqrt{5}}{6-2\sqrt{5}} \times \frac{6+2\sqrt{5}}{6+2\sqrt{5}}$	**B1**	or squares $(1+\sqrt{5})^2 = 1+\sqrt{5}+\sqrt{5}+5$
	Multiplies out, e.g. $\frac{60+20\sqrt{5}+12\sqrt{5}+4(5)}{36-20}$	**M1**	Multiplies out $\left[\frac{10+2\sqrt{5}}{(1-\sqrt{5})^2} \times \frac{6+2\sqrt{5}}{(1+\sqrt{5})^2} = \right] \frac{60+20\sqrt{5}+12\sqrt{5}+4(5)}{(1-5)^2}$
	$5+2\sqrt{5}$	**A2**	A1 for $k+2\sqrt{5}$ or $5+k\sqrt{5}$
3	$x-3 = k^2x^2+5kx+1$	**M1**	
	$k^2x^2+(5k-1)x+4=0$ soi	**A1**	
	$(5k-1)^2-4(k^2)(4)$	**M1**	
	$9k^2-10k+1*0$	**M1**	
	Critical values: $\frac{1}{9}$ and 1 soi	**A1**	
	$k<\frac{1}{9}$ or $k>1$	**A1**	

Question	Answer	Marks	Partial Marks
4	Factorised form: $(x+n)(x-n)(2x-1)$ oe	**B1**	
	Multiplies out correctly	**M1**	**FT** *their* factorised form provided of equivalent difficulty
	Correct expanded form in terms of n: $2x^3-x^2-2n^2x+n^2$	**A1**	
	Uses (*their* n^2) $=4$ in *their* expression	**M1**	
	$2x^3-x^2-8x+4$	**A1**	If **A0A0** then **SC1** for $(x+n)(x-n)(x-0.5)$ giving $n^2=8$ leading to $x^3-\frac{1}{2}x^2-8x+4$
			Alternative method: **B1** for factorised form: $(x+n)(x-n)(2x-1)$
			M1 for *their* $n^2=4$
			A1 for $n=2$
			M1 for multiplying out $(x+their\,2)(x-their\,2)(2x-1)$
			A1 for $2x^3-x^2-8x+4$ If **A0A0** then **SC1** for $(x+n)(x-n)(x-0.5)$ giving $n^2=8$ leading to $x^3-\frac{1}{2}x^2-8x+4$
5(a)	Finds coordinates of mid-point (8, –2)	**B1**	
	$m_{AB}=\frac{3+7}{4-12}\left[=-\frac{5}{4}\right]$ oe soi	**B1**	
	$m_L=\frac{-1}{-5/4}$ oe	**M1**	
	$y+2=\frac{4}{5}(x-8)$ oe isw	**A1**	