Question	Answer	Marks	Guidance
1(b)	$x * 3$	**B1**	* can be any inequality sign or =
	$-3x + 4 < x + 2$ or $3x - 4 > -x - 2$	**M1**	
	$x * \frac{1}{2}$	**A1**	* can be any inequality sign or =
	$\frac{1}{2} < x < 3$	**A1**	Do not accept $\frac{1}{2} < x$, $x < 3$ unless and is between the inequalities
	Alternative method:		
	$9x^2 - 24x + 16 * x^2 + 4x + 4$	**(M1)**	Square both sides * can be any inequality sign or =
	$(2x - 1)(x - 3) * 0$	**(M1)**	* can be any inequality sign or =
	Critical values $\frac{1}{2}$, 3	**(A1)**	
	$\frac{1}{2} < x < 3$	**(A1)**	Do not accept $\frac{1}{2} < x$, $x < 3$ unless 'and' is between the inequalities
2	$2xe^{3x} + 3x^2e^{3x}$ isw	**3**	**B1** for $3e^{3x}$ **M1** for use of product rule **A1 FT** *their* $3e^{3x}$
3	$x = \frac{\pi}{15}$	**B1**	Allow for $5x = \frac{\pi}{3}$
	$\frac{dy}{dx} = 5\cos 5x \left[= \frac{5}{2} \right]$	**B1**	For differentiation
	$\frac{\delta y}{\delta x} = \frac{0.01}{\delta x} = their \frac{5}{2}$ oe	**DM1**	**Dep** on previous **B1 FT** *their* $\frac{5}{2}$ Allow if $\delta x = \frac{0.01}{5\cos 5x}$
	$\delta x = 0.004$ or $\frac{1}{250}$	**A1**	

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Question	Answer	Marks	Guidance
4(a)	Velocity at time T is $2T$ soi	**B1**	
	$\frac{1}{2}(8+4-T)\times 2T = 27$	**M1**	For an attempt trapezium area or three areas **and** = 27 using *their* 2T
	$(T-3)(T-9) = 0$	**M1**	**Dep** on previous **M1** for solving *their* 3-term quadratic by factorising, completing the square or quadratic formula
	3	**A1**	
	Alternative method		
	Velocity at time T is $2T$ leading to $T = \frac{v}{2}$ soi	**(B1)**	
	$\frac{1}{2}\left(8+4-\frac{v}{2}\right)\times v = 27$	**(M1)**	For an attempt trapezium area = 27 using *their* $\frac{v}{2}$
	$(18-v)(v-6) = 0$	**(M1)**	**Dep** on previous **M1** for solving *their* 3-term quadratic by factorising, completing the square or quadratic formula
	$v = 6$ then $T = 3$	**(A1)**	
4(b)	$a = \frac{0-\textit{their}2T}{8-4}$ oe	**M1**	For an attempt on gradient using *their T*
	−1.5	**A1**	Must be negative

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