Question	Answer	Marks	Guidance
2(c)	Use of *their* (a) or expansion to 3 term quadratic (= 0), to obtain two critical values.	**M1**	
	$-\frac{9}{4}$, $-\frac{1}{4}$	**A1**	For both critical values
	$-\frac{9}{4} < x < -\frac{1}{4}$	**A1**	
3(a)	$\lg\frac{500a^2}{b}$ oe	**3**	**B1** for $\lg a^2$, $-\lg 2b$ or $\lg 1000$ **B2** for $\lg\frac{a^2}{2b}$, $\lg 1000a^2$ or $\lg\frac{1000}{2b}$
3(b)	$\log_3 c = \frac{1}{\log_c 3}$	**B1**	
	$2(\log_c 3)^2 - 7\log_c 3 - 4 \ (=0)$ $(2\log_c 3 + 1)(\log_c 3 - 4) \ (=0)$ $\log_c 3 = -\frac{1}{2}$, $\log_c 3 = 4$	**M1**	Attempt to obtain a 3 term quadratic equation (= 0) and attempt to solve to obtain $\log_c 3 = ...$ Allow one sign error
	$c^{-\frac{1}{2}} = 3$ $c^4 = 3$	**M1**	**Dep** for attempt to solve at least one of *their* log equations
	$c = \frac{1}{9}$, $c = 3^{\frac{1}{4}}$ or exact equivalents	**2**	**A1** for each
	Alternative Method		
	$\log_c 3 = \frac{1}{\log_3 c}$	**B1**	
	$4(\log_3 c)^2 + 7\log_3 c - 2 \ (=0)$ $(4\log_3 c - 1)(\log_3 c + 2) \ (=0)$ $\log_3 c = \frac{1}{4}$, $\log_3 c = -2$	**M1**	Attempt to obtain a 3 term quadratic equation = 0 and attempt to solve to obtain $\log_3 c = ...$ Allow one sign error
	$c = 3^{\frac{1}{4}}$, c $= \frac{1}{9}$ or exact equivalents	**3**	**M1 dep** for attempt to solve at least one of *their* log equations. **A2** for both or **A1** for either

Question	Answer	Marks	Guidance
4	$5x^2-8x-4\ \ (=0)$ or $5y^2-36y-305\ \ (=0)$	**M1**	For attempt to eliminate one variable to obtain a 3 term quadratic equation (= 0). Allow one sign error.
	$x=-\frac{2}{5},\ x=2$ $y=-\frac{61}{5},\ y=-5$	**3**	**Dep M1** for attempt to solve *their* quadratic equation **A1** for any correct pair **A1** for a second correct pair.
	Mid-point $\left(\frac{4}{5},\ -\frac{43}{5}\right)$	**M1**	For attempt to find mid-point using *their* coordinates
	Gradient of perpendicular = $-\frac{1}{3}$	**B1**	
	$y+\frac{43}{5}=-\frac{1}{3}\left(x-\frac{4}{5}\right)$	**M1**	For attempt to find the equation of the perpendicular bisector using *their* perpendicular gradient and *their* midpoint. Allow alternative methods
	$a=-1$	**A1**	
5(a)	$x^{20}-40x^{16}+720x^{12}$	**3**	**B1** for each correct term
5(b)	$\left(x^4+4+\frac{4}{x^4}\right)$	**B1**	Allow unsimplified
	$\left(4\times their\ -40\right)+4+their720$ soi	**M1**	Must have 3 terms
	564	**A1**	
6(a)	$\frac{1}{2}r^2\theta=25$ $\theta=\frac{50}{r^2}$	**B1**	
	$P=2r+\frac{50}{r}$	**2**	**M1** for use of $P=2r+r\theta$ with attempt to eliminate θ