Question	Answer	Marks	Guidance
2(c)	When $x=\frac{8}{3}$, $y=\frac{1372}{27}$ or awrt 50.8	**M1**	For attempt to find the value of y using *their* $\frac{8}{3}$.
	$k>\frac{1372}{27}$ or awrt 50.8	**A1**	
	$k<0$	**B1**	
3	${}^{10}C_2(2x)^8\left(-\frac{1}{x}\right)^2$ or ${}^{10}C_1(2x)^9\left(-\frac{1}{x}\right)^1$	**M1**	For attempting to find terms which will give terms of x^8 or x^6, allow coefficients. Allow as part of an expansion
	45×256 $\left[x^6\right]$ oe	**A1**	
	$[-]$ 5120 $\left[x^8\right]$	**A1**	
	their(-11520) + *their*(-5120)	**M1**	**Dep**
	–16 640	**A1**	Condone inclusion of x^8
4(a)	$\lg\frac{x^3}{1000y^4}$ oe	**3**	**B1** for $3=\lg1000$ **M1** for correct use of power rule at least once and division rule at least once **A1** cao
4(b)	$\log_x 3=\frac{1}{\log_3 x}$ soi	**B1**	For change of base.
	$2(\log_3 x)^2-5(\log_3 x)+2=0$	**M1**	For attempt to obtain a 3-term quadratic equation, equated to zero. Allow one sign error. May be using a substitution.
	$2\log_3 x=1$ $\log_3 x=2$	**M1**	**Dep** for attempt to solve *their* quadratic equation and a correct attempt to obtain at least one value of x.
	$x=\sqrt{3}$ oe	**A1**	Allow 1.73(2…)
	$x=9$	**A1**	

Question	Answer	Marks	Guidance
4(b)	**Alternative method 1**		
	$\log_3 x = \frac{1}{\log_x 3}$ soi	**B1**	For change of base.
	$2(\log_x 3)^2 - 5(\log_x 3) + 2 = 0$	**M1**	For attempt to obtain a 3-term quadratic equation, equated to zero. Allow one sign error.
	$2\log_x 3 = 1 \quad \log_x 3 = 2$	**M1**	**Dep** for attempt to solve *their* quadratic equation and a correct attempt to obtain at least one value of x.
	$x = \sqrt{3}$ oe	**A1**	Allow 1.73(2…)
	$x = 9$	**A1**	
	Alternative method 2		
	$\log_3 x = \frac{\lg x}{\lg 3}$ and $\log_x 3 = \frac{\lg 3}{\lg x}$ oe	**B1**	For a consistent change of base.
	$2(\lg x)^2 - 5(\lg x) + 2(\lg 3)^2 = 0$ oe	**M1**	For attempt to obtain a 3-term quadratic equation, equated to zero. Allow one sign error.
	$2\lg x = \lg 3 \quad \lg x = 2\lg 3$ oe	**M1**	**Dep** for attempt to solve *their* quadratic equation and a correct attempt to obtain at least one value of x.
	$x = \sqrt{3}$ oe	**A1**	Allow 1.73(2…)
	$x = 9$ oe	**A1**	
5(a)		**2**	**B1** for 3 or 4 correctly plotted points