Question	Answer	Marks	Guidance
2(a)	$q(x) = 3x^2 - 10x - 8$ $r = 5$	**3**	**M1** for a valid attempt to obtain the quotient by algebraic long division, synthetic division, factorising $(2x - 5)$ or by forming an identity **A1** for each
2(b)	$[p(x) - 5 =](3x^2 - 10x - 8)(2x - 5)$	**M1**	For a correct attempt to factorise
	$(3x + 2)(x - 4)(2x - 5)$	**A1**	Must see $p(x) - 5$ as a product of linear factors
2(c)	$x = -\frac{2}{3},\ 4,\ \frac{5}{2}$	**B1**	**FT** on *their* 3 terms quadratic $q(x)$
3(a)	$1 = \lg 10$ soi	**B1**	
	$\lg \frac{10(x^2 - 1)}{(x - 1)^2}$ oe	**M1**	For correct use of logs power rule **or** multiplication **or** division rule. i.e.: Award **M1** for example: $2\log(x-1) = \log(x-1)^2$ $\log(x^2 - 1) = \log(x-1) + \log(x+1)$ $\log 10 + \log(x^2 - 1) = \log 10(x^2 - 1)$ $\log(x^2 - 1) - \log(x-1)^2 = \log \frac{(x^2 - 1)}{(x-1)^2}$
	$\lg \frac{10(x - 1)(x + 1)}{(x - 1)^2}$	**DM1**	**Dep** on previous **M1** for a correct attempt to factorise and an attempt to simplify
	$\lg \frac{10(x + 1)}{x - 1}$	**A1**	
3(b)	$[4\log_5(x + 1) =] \frac{9}{\log_5(x + 1)}$ or $\frac{4}{\log_{(x+1)} 5} [= 9\log_{(x+1)} 5]$	**B1**	For change of base
	$(\log_5(x + 1))^2 = \frac{9}{4}$ or $(\log_{(x+1)} 5)^2 = \frac{4}{9}$	**2**	**M1** for a correct method in forming a quadratic equation Dep on previous **B1**
	$x + 1 = 5^{(\pm)\frac{3}{2}}$	**M1**	**Dep** on dealing with logarithms correctly Allow if ± is missing
	$x = -1 + 5\sqrt{5},\quad -1 + \frac{1}{25}\sqrt{5}$	**A1**	

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Question	Answer	Marks	Guidance
4(a)	$n = 5$	**B1**	
	$5 \times 3^4 p = 810$	**M1**	For considering the second term. Allow for use of *their n*
	$p = 2$	**A1**	
	$10 \times 3^3 \times p^2 = q$	**M1**	For considering the third term. Allow for use of *their n* and p^2
	$q = 1080$	**A1**	
4(b)	${}^6C_2 (2y)^4 \left((-)\frac{1}{3y^2} \right)^2$	**M1**	For identifying the correct term. Condone errors with brackets and coefficients. Could be implied by a correct answer
	$\frac{80}{3}$ oe	**A1**	Must be exact. Allow $\frac{240}{9}$ or $26\frac{2}{3}$
5(a)	$a = 5,\ b = \frac{3}{4}$ (oe), $c = -4$	**3**	**B1** for each
5(b)	$[p =]1,\ [p =]5$	**2**	**B1** for each Do not allow if written as inequalities
6	$\ln(2x - 3)$	**B1**	Allow unsimplified
	$\frac{1}{3x - 5}$ oe	**B1**	
	$\ln 5 + \frac{1}{7} - 1$	**M1**	For correct application of limits in *their* integral, Must be in the correct form $a \ln(2x - 3) \pm \frac{b}{3x - 5}$
	$\ln 5 - \frac{6}{7}$ cao	**A1**	

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