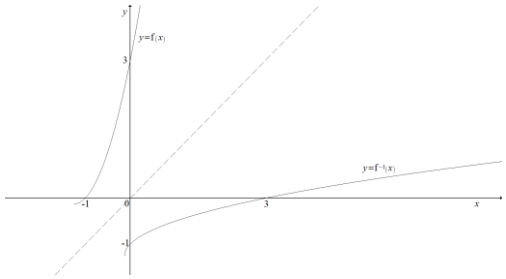
Question	Answer	Marks	Guidance
4(c)(ii)		**5**	**B1** for $y = \mathrm{f}(x)$ drawn as a one-one function in the first, second and third quadrants or first and second quadrants. Must have correct curvature **Dep B1** for $y = \mathrm{f}^{-1}(x)$ as a reflection of *their* $y = \mathrm{f}(x)$ in the line $y = x$. Maybe implied by intercepts, but must have the correct curvature **B1** for $y = \mathrm{f}(x)$ clearly passing through $x = -1$ correctly soi. Allow if domain is unrestricted but must have correct quadratic shape or curvature **B1** for $y = \mathrm{f}(x)$ passing through $y = 3$ only on the y-axis soi. Allow if domain is unrestricted but must have correct quadratic shape or curvature **B1** for – 1 and 3 marked correctly for $y = \mathrm{f}^{-1}(x)$ allow for unrestricted range. Must have correct curvature.
5(a)	$\lg\left(\frac{a^5}{1000b^4}\right)$ or $\lg\left(\frac{a^5}{10^3b^4}\right)$ or $\lg\left(10^{-3}a^5b^{-4}\right)$ or $\lg\left(0.001a^5b^{-4}\right)$ or $\lg\left(\frac{a^5b^{-4}}{10^3}\right)$ or equivalent correct single logarithm to base 10.	**3**	**B2** for $\lg\left(a^5 \div b^4 \div 1000\right)$ **or B2** for $\lg\left(\frac{a^5}{b^4} \div 1000\right)$ **B1** for $3 = \lg 1000$ or $\lg 10^3$ soi **B1** for use of the power rule at least once

Question	Answer	Marks	Guidance
5(b)	$\log_5(x+1) - \dfrac{1}{\log_5(x+1)} = 0$ oe	**B1**	For change of base seen in the equation, allow for $\log_5(x+1) - \dfrac{\log_5 5}{\log_5(x+1)} = 0$
	$\left(\log_5(x+1)\right)^2 = 1$ leading to $\log_5(x+1) = [\pm]1$	**M1**	For correct simplification to a 2-term quadratic and at least one solution, may be implied by a substitution
	$x = 4$	**A1**	**SC B1** if 'spotted' from a correct equation
	$x = -\dfrac{4}{5}$	**A1**	**A0** if rejected or crossed out
	Alternative method 1		
	$\log_{x+1} 5 - \dfrac{1}{\log_{x+1} 5} = 0$ oe	**(B1)**	For change of base seen in the equation, allow for $\log_{x+1} 5 - \dfrac{\log_{x+1}(x+1)}{\log_{x+1} 5} = 0$
	$\left(\log_{x+1} 5\right)^2 = 1$ $\log_{x+1} 5 = [\pm]1$	**(M1)**	For correct simplification to a 2-term quadratic and at least one solution, may be implied by a substitution.
	$x = 4$	**(A1)**	
	$x = -\dfrac{4}{5}$	**(A1)**	**A0** if rejected or crossed out
	Alternative method 2		
	$\dfrac{\lg(x+1)}{\lg 5} - \dfrac{\lg 5}{\lg(x+1)} = 0$ oe	**(B1)**	For change of base seen in the equation, allow for $\lg(x+1) - \dfrac{\lg 10}{\lg(x+1)} = 0$
	$\left(\lg(x+1)\right)^2 = (\lg 5)^2$ leading to $\lg(x+1) = [\pm]\lg 5$	**(M1)**	For correct simplification to a 2-term quadratic and at least one solution, may be implied by a substitution
	$x = 4$	**(A1)**	**SC B1** if 'spotted' from a correct equation
	$x = -\dfrac{4}{5}$	**(A1)**	**A0** if rejected or crossed out

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Question	Answer	Marks	Guidance
6	$2x^2 + x - 10 = 5$ leading to $2x^2 + x - 15 = 0$ with a valid attempt to solve to obtain 2 values for x	**M1**	
	$x = \frac{5}{2},\ \ -3$	**A1**	For both Mark final answer for this equation, **A0** if – 3 is rejected
	$2x^2 + x - 10 = -5$ leading to $2x^2 + x - 5 = 0$	**M1**	Must be a correct 3-term quadratic equated to zero
	$x = \frac{-1 \pm \sqrt{41}}{4}$ oe	**2**	**Dep M1** for a valid method of solution to obtain 2 values for x. Mark final answer for this equation, **A0** if negative root is rejected Denominator of final answer must be positive
7(a)	Grad $AB = \frac{6}{8}$ oe Grad $AC = -\frac{2}{14}$ oe Grad $BC = -\frac{8}{6}$ oe	**2**	**B1** for 2 correct unsimplified
7(b)	Centre $(5,\ 3)$	**B1**	**FT** on *their* diameter, allow for $(2,\ 7)$ or $(9,\ 6)$
	Radius^2 = 50 oe soi	**2**	**M1** for use of *their* centre and coordinates of either A, B or C to find the square of the radius or the radius. Centre must not be A, B or C. or Finding the length between any 2 points A, B or C **and** halving it.
	$(x-5)^2 + (y-3)^2 = 50$ oe	**A1**	Allow $\left(5\sqrt{2}\right)^2$ for radius^2