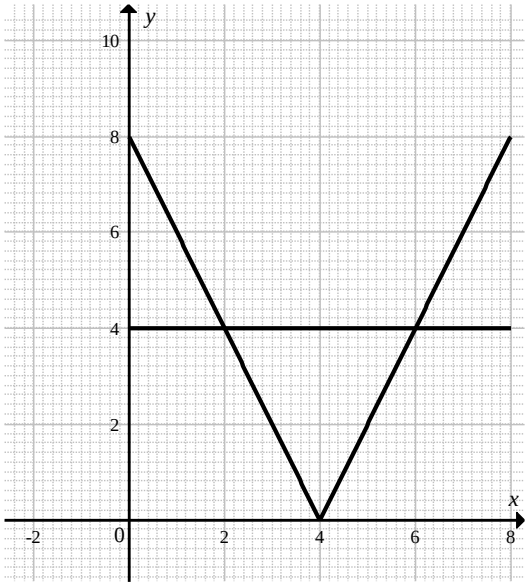
Question	Answer	Marks	Partial marks
4	Correct intersecting graphs  	**3**	$y = \|2x - 8\|$: **M1** for an attempt to draw the sections from (0, 8) to (2, 4) and (6, 4) to (8, 8) with at least one side accurate or for $\vee$ shape with vertex at (4, 0) **A1** for correct graph **B1** for $y = 4$ drawn
	critical values: 2, 6	**M1**	**dep** on 3 marks awarded for intersecting graphs
	$x < 2$, $x > 6$ mark final answer	**A1**	
5(a)	Correctly derives correct equation free of logarithms e.g. $x^9 = 16^{18}$ or $x = 16^2$ oe or $x^9 = 2^{72}$ or $x = 2^8$ oe or $x^{\frac{9}{4}} = 2^{18}$ oe	**M3**	**M2** for correctly changing to consistent bases **and** correct use of one other log law or correct use of $\log_a a = 1$ in a correct equation e.g. $\frac{\log_{16} x^2}{\frac{1}{4}} + \log_{16} x = 18$ oe or $\log_2 x^2 + \frac{\log_2 x}{4} = 18$ oe or $\frac{\log_x x^2}{\log_x 2} + \frac{\log_x x}{4\log_x 2} = 18$ or **M1** for correctly changing to consistent bases or correct use of one other log law or correct use of $\log_a a = 1$ in a correct equation
	$x = 256$ nfww	**A1**	

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Question	Answer	Marks	Partial marks
5(b)	$e^{4x+2} - 3e^{2x+1} - 10$ [= 0] or $\left(e^{2x+1}\right)^2 - 3e^{2x+1} - 10$ [= 0]	**B1**	
	Solves or factorises *their* 3-term quadratic in e^{2x+1}	**M1**	**FT** *their* 3-term quadratic in e^{2x+1}
	$e^{2x+1} = 5$ nfww	**A1**	
	$x = \frac{-1+\ln 5}{2}$ oe, isw or 0.305 or 0.3047[18…] isw	**A1**	and no other solution
	Alternative		
	$e(e^{2x})^2 - 3e^{2x} - 10e^{-1}$ [= 0] oe or $e^2(e^{2x})^2 - 3e(e^{2x}) - 10$ [= 0] oe or $e^2(e^x)^4 - 3e(e^x)^2 - 10$ [= 0] oe	**(B1)**	
	Solves or factorises *their* 3-term quadratic in e^{2x} oe	**(M1)**	**FT** *their* 3-term quadratic in e^{2x}
	$e^{2x} = \frac{5}{e}$ or 1.839[…] or $e^x = \sqrt{\frac{5}{e}}$ or 1.356[…] nfww	**(A1)**	
	$x = \frac{1}{2}\ln\frac{5}{e}$ oe, isw or 0.305 or 0.3047[18…] isw	**(A1)**	and no other solution
6	$\frac{5-\sqrt{3}}{\left(\sqrt{6}+\sqrt{2}\right)^2}$ soi	**B1**	
	$\left(\sqrt{6}+\sqrt{2}\right)^2 = 6+2+2\sqrt{12}$ or $8+2\sqrt{12}$	**B1**	
	$\frac{5-\sqrt{3}}{8+4\sqrt{3}} \times \frac{8-4\sqrt{3}}{8-4\sqrt{3}}$ or $\frac{5-\sqrt{3}}{4\left(2+\sqrt{3}\right)} \times \frac{2-\sqrt{3}}{2-\sqrt{3}}$ oe	**M1**	**FT** $\frac{a(5-\sqrt{3})}{b+c\sqrt{d}}$ where *a*, *b*, and *c* are non-zero constants and *d* is an integer
	$\frac{40-20\sqrt{3}-8\sqrt{3}+12}{8^2-(4\sqrt{3})^2}$ or $\frac{40-20\sqrt{3}-8\sqrt{3}+12}{64-48}$ or $\frac{10-5\sqrt{3}-2\sqrt{3}+3}{4(2^2-(\sqrt{3})^2)}$ or $\frac{10-5\sqrt{3}-2\sqrt{3}+3}{4}$	**A1**	
	$\frac{13}{4} - \frac{7}{4}\sqrt{3}$ oe, nfww	**A1**	**dep** on all previous marks awarded