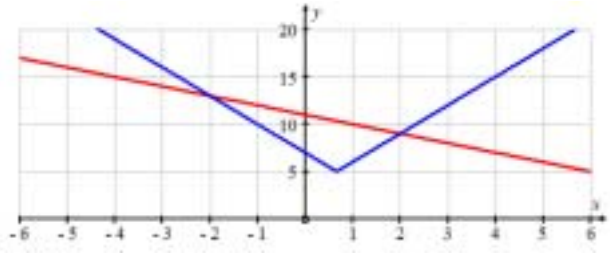
Question	Answer	Marks	Partial Marks
1(a)		**4**	**M1** for ∨ shape of $y = 5 + \lvert 3x - 2 \rvert$ with vertex at $\left(\frac{2}{3}, 5\right)$ **A1** for correct graph with y-intercept $(0,7)$ **M1** for correct straight line for $y = 11 - x$ **A1** for correct straight line with y-intercept $(0,11)$
1(b)	$x > 2$ or $x < -2$	**B2**	Mark final answer for **B2** **B1 FT** for exactly two correct critical values or correct FT critical values soi, FT dependent on at least M1 in **(a)**
2(a)	$16 - 96x + 216x^2 - 216x^3 + 81x^4$	**B4**	Mark final answer for **B4** **B3** for any 4 correct simplified terms in a sum or for all 5 simplified terms listed but not summed or for a correct simplified expansion that is not their final answer or **B2** for any 3 correct simplified terms in a sum or for 4 correct simplified terms listed but not summed or **B1** for any 2 correct simplified terms in a sum or for 3 correct simplified terms listed but not summed or **M1** for correct unsimplified expansion $2^4 + 4\times 2^3(-3x) + 6\times 2^2(-3x)^2$ $+4\times 2(-3x)^3 + (-3x)^4$

Question	Answer	Marks	Partial Marks
2(b)	*their* $\left(16-96x+216x^2\ldots..\right)\times\left(1+\frac{a}{x}\right)$ $= 16-96x+16\frac{a}{x}-96a+216ax\ldots$ soi	**B1**	**FT** Expansion using *their* **(a)**
	$a=2$	**B1**	**FT** *their* $16\frac{a}{x}$
	$b=-176$	**B1**	
	$c=336$	**B1**	
3(a)	$\frac{\cos x}{1-\cos x}+\frac{\cos x}{1+\cos x}$ or $\frac{\sec x+1+\sec x-1}{\sec^2 x-1}$	**M1**	
	$\frac{\cos x+\cos^2 x+\cos x-\cos^2 x}{1-\cos^2 x}$ or $\frac{2\sec x}{\tan^2 x}$	**A1**	
	$\frac{2\cos x}{\sin^2 x}$ or $\frac{2\cos^2 x}{\cos x\sin^2 x}$ oe	**A1**	
	Fully correct justification of given answer: 2cot*x*cosec*x*	**A1**	
3(b)	$3\tan^2 x=2$ oe or better, soi or $5\cos^2 x=3$ oe or better, soi or $5\sin^2 x=2$ oe or better, soi	**B1**	
	$\tan x=[\pm]\sqrt{\frac{2}{3}}$ oe or [±] 0.816[4…] or $\cos x=[\pm]\sqrt{\frac{3}{5}}$ oe or [±] 0.774[5…] or $\sin x=[\pm]\sqrt{\frac{2}{5}}$ oe or [±] 0.632[4…]	**M1**	**FT** an equation of the form $a\tan^2 x=b$, $a>0$, $b>0$ or $p\sin^2 x=q$ or $p\cos^2 x=q$ where $p>0$, $q>0$ and $p>q$
	39.2° or 39.2315… rot to 2 or more dp 140.8° or 140.7684… rot to 2 or more dp 219.2° or 219.2315… rot to 2 or more dp 320.8° or 320.7684… rot to 2 or more dp	**A2**	no extras in range **A1** for any two correct answers