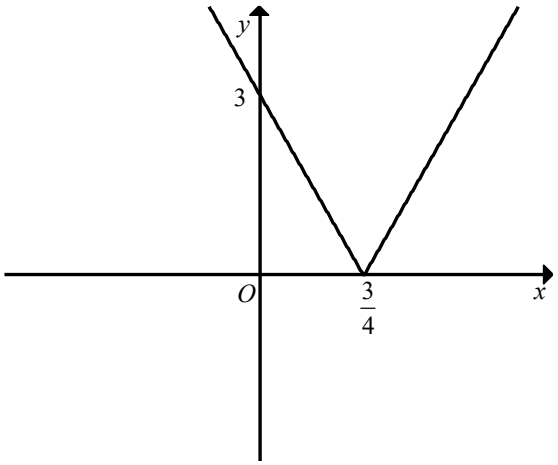
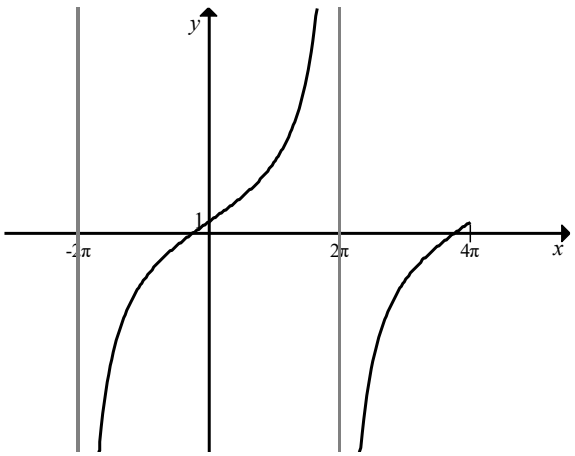
Question	Answer	Marks	Partial Marks
1	$-2 \leqslant x \leqslant \frac{5}{4}$ mark final answer	**B2**	**B1** for the correct critical values
2	Attempts to find $y = 4x - 5x^{-2}$	**M1**	at least one term correct
	$\frac{dy}{dx} = 4 + 10x^{-3}$	**A1**	
	Correct completion to given answer $\frac{2(2x^3+5)}{x^3}$	**A1**	
	Alternative version		
	$\frac{dy}{dx} = \frac{12x^4 - 8x^4 + 10x}{x^4}$ or equivalent unsimplified form	**(2)**	**M1** for an attempt at the quotient rule with correct structure $\frac{dy}{dx} = \frac{x^2(their 12x^2) - \left(4x^3 - 5\right)(their 2x)}{\left(x^2\right)^2}$
	Correct completion to given answer $\frac{2(2x^3+5)}{x^3}$	**(A1)**	
3	$\sqrt{y} = mx^3 + c$ soi	**M1**	
	$m = \frac{21-5}{10-2}$ oe or 2	**M1**	
	$c = 5 - 2(2)$ oe or 1	**M1**	**FT** *their m*
	$y = (2x^3 + 1)^2$ oe, isw	**A1**	
	Alternative method		
	$\sqrt{y} = mx^3 + c$ soi	**(M1)**	
	$21 = 10m + c$ and $5 = 2m + c$ and solves to find $m = 2$ or $c = 1$	**(M1)**	
	Finds the other unknown	**(M1)**	**FT** *their m* or *c*
	$y = (2x^3 + 1)^2$ oe, isw	**(A1)**	
4(a)	Range of f is equal to the domain of f oe	**1**	

© Cambridge University Press & Assessment 2025

Question	Answer	Marks	Partial Marks
4(b)	$f^2(x) = 4x - 3$ soi	**B2**	**B1** for correct order of composition
	Correct sketch with both intercepts indicated 	**B2**	**FT** *their* $(4x - 3)$ providing B1 has been awarded and the expression is of the form $mx + c$ **B1 FT** for correct sketch with one intercept correct
4(c)	[When $x = -1$] $y = 7$ [When $x = 3$] $y = 9$	**B1**	**FT** *their* $(4x - 3)$ providing it has been formed using a correct order of composition and the expression is of the form $mx + c$
	$a = \frac{9-7}{3+1}$ oe or $7 = -a + b$ and $9 = 3a + b$ and solves correctly for one unknown	**M1**	**FT** *their* y-coordinates
	$a = \frac{1}{2}$, $b = \frac{15}{2}$	**A1**	
5(a)	4π	**B1**	
5(b)	Correct sketch with y-intercept and asymptotes marked 	**3**	**B1** for correct shape for both sections **B2** for asymptotes drawn at -2π, 2π and the y-intercept marked as 1; must have attempted correct shape or **B1** for any two of these; must have attempted correct shape or If 0 scored then **SC1** for correct graph between -2π and 2π with asymptotes marked at -2π, 2π and the y-intercept marked as 1

© Cambridge University Press & Assessment 2025