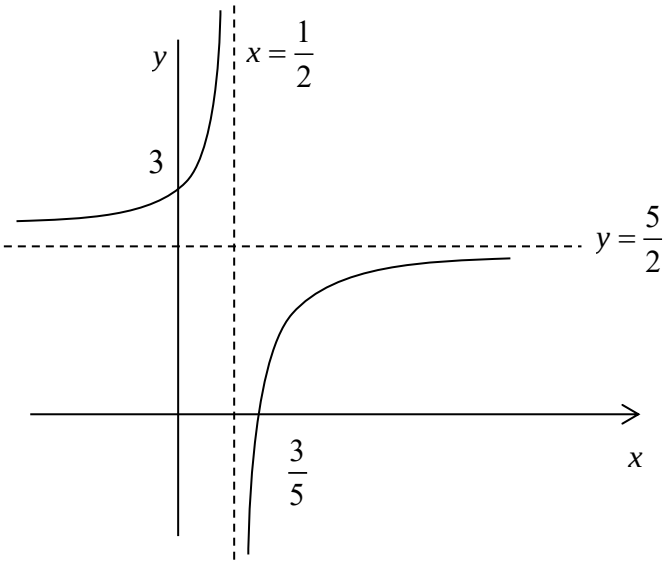
Question number	Scheme	Marks
8(a)	(i) $x=\frac{1}{2}$	B1
	(ii) $y=\frac{5}{2}$	B1
		(2)
(b)	Coordinates of intersection with y-axis $y=\frac{-3}{-1}=3 \quad (0,3)$	B1
	Coordinates of intersection with y-axis $5x-3=0 \Rightarrow x=\frac{3}{5} \Rightarrow \left(\frac{3}{5},0\right)$	B1
		(2)
(c)	$\frac{dy}{dx}=\frac{5(2x-1)-2(5x-3)}{(2x-1)^2}$	M1A1
	$\frac{dy}{dx}=\frac{1}{(2x-1)^2}$ - numerator is positive, denominator is squared so always positive, hence $\frac{dy}{dx}$ is also always positive (except when $x=\frac{1}{2}$, so not defined).	dM1A1
		(4)
(d)		B1 B1 B1
		(3)
(e)	$y=2$	B1
	$\frac{dy}{dx}=\frac{1}{1^2}=1$	M1
	$(y-2)=1\times(x-1)$	M1
	$\Rightarrow y=x+1$	A1
		(4)
		[15]

Additional Notes			
Part	**Mark**	**Guidance**	
(a) (i)	B1	$x = \frac{1}{2}$ or $x = 0.5$ only	If these parts are not labelled clearly (i) and (ii) then mark in order treating the first answer as (i) and the second as (ii)
(ii)	B1	$y = \frac{5}{2}$ or $y = 2.5$ only	
(b)	B1	$(0,3)$ OR $\left(\frac{3}{5},0\right)$	Accept **paired** values of $x = 0, y = 3$ $x = \frac{3}{5}, y = 0$
	B1	$(0,3)$ AND $\left(\frac{3}{5},0\right)$	
(c)	M1	Attempts to differentiate both terms and uses the quotient rule correctly. Minimally acceptable attempt; • $5x-3 \Rightarrow a, \quad 2x-1 \Rightarrow b \quad a \neq 0, b \neq 0$ • $\frac{dy}{dx} = \frac{a(2x-1)-b(5x-3)}{(2x-1)^2}$ OR $\frac{b(5x-3)-a(2x-1)}{(2x-1)^2}$ Or uses Product Rule with the same conditions.	
	A1	For the correct differentiated expression. $\frac{dy}{dx} = \frac{5(2x-1)-2(5x-3)}{(2x-1)^2}$	
	dM1	Simplifies their $\frac{dy}{dx}$ to give $\frac{dy}{dx} = \frac{k}{(2x-1)^2} \quad k \neq 0$	
	A1	A conclusion that must include; Denominator is squared hence will always be positive or $\frac{dy}{dx} > 0$	
(d)	B1	Shape: As shown with two arms, one arm in the 1st and 2nd quadrants, and the other arm in the 4th and 1st quadrants. The ends must look like they approach asymptotes – do not accept ends curling back on themselves.	
	B1	For **both** asymptotes drawn and marked cao	At least one branch of the curve must be present for the award of either of these marks (which must be asymptotic) and the curve must go **through** the axes for the intersection mark. i.e., not stop at the axis.
	B1	For **both** intersections marked cao	
(e)	B1	For $y = 2$ only	
	M1	Substitutes $x = 1$ into their differentiated expression and attempts to find a value for the gradient.	
	M1	Uses the formula for the equation of a line or $y = mx + c$ with their values of y and m. If they use $y = mx + c$ they must achieve a value for c for the award of this mark.	
	A1	For $y = x + 1$ or $y = 1 + x$	