

Question		Answer	Marks	AOs	Guidance
10	(a)	<p>Correct shape for $y = \frac{1}{x}$, translated vertically upward</p> <p>Crosses x-axis at $x = -\frac{1}{a}$</p> <p>Asymptotes $x=0$ and $y=a$</p>	<p>B1</p> <p>B1</p> <p>B2</p> <p>[4]</p>	<p>1.1</p> <p>2.2a</p> <p>1.1</p> <p>2.2a</p>	<p>B1 for one asymptote correct</p>
10	(b)	<p>$\frac{dy}{dx} = -\frac{1}{x^2}$</p> <p>When $x=2$, gradient $= -\frac{1}{4}$</p> <p>Gradient of normal = 4 FT their gradient</p> <p>$y - \frac{5}{2} = 4(x - 2)$ FT their gradient</p> <p>$2y = 8x - 11$ oe</p>	<p>M1</p> <p>M1</p> <p>M1</p> <p>M1</p> <p>A1</p> <p>[5]</p>	<p>1.1a</p> <p>1.1</p> <p>2.1</p> <p>1.1</p> <p>2.1</p>	<p>Or gradient of given line is 4 and check $4 \times -\frac{1}{4} = -1$</p> <p>Or $y = \frac{5}{2}$ at the point on the curve where $x=2$</p> <p>At least one correct interim step or clear check that $(2, \frac{5}{2})$ is on given line</p> <p>Any simplified form</p>

Question		Answer	Marks	AOs	Guidance
10	(c)	$2\left(\frac{1}{x} + 2\right) = 8x - 11$	M1	3.1a	Substitution
		$8x^2 - 15x - 2 = 0$	M1	1.1	Forming quadratic, condone one error
		Other point is $x = -\frac{1}{8}, y = -6$	A1	1.1	BC $x = 2$ not needed in this case
			[3]		