Question	Answer	Marks	Guidance
(a)	$mx + c = -\frac{m}{x} \Rightarrow mx^2 + cx + m = 0$	M1	All x terms in the numerator. OE e.g. $mx^2 + cx = -m$.
	$b^2 - 4ac = 0 \Rightarrow c^2 - 4m^2 = 0$	M1	OE $b^2 - 4ac = 0$ is implied by $c^2 - 4m^2 = 0$.
	$c = [\pm]2m$	A1	SOI. Allow $\pm$ at this stage.
	$mx^2\ [\pm]2mx + m = 0 \Rightarrow x^2 [\pm]2x + 1 = 0$	M1	Sub $c = +2m$ Ignore substitution of $-2m$.
	$(x+1)^2 = 0 \Rightarrow x = -1$ only	A1	
	$y = m$ only or $(-1, m)$ only	A1	
	Alternative method to question (a)		
	$\frac{dy}{dx} = \frac{m}{x^2}$	M1	As this is a method mark a sign error is allowed.
	$\frac{m}{x^2} = m \Rightarrow x^2 = 1$	M1 A1	Equating *their* $\frac{dy}{dx}$ and m and attempt to solve.
	$x = \pm 1$ or $x = -1$	A1	If $x = -1$ and $y = m$ are the only answers offered here award the final M1 A1.
	Selecting $x = -1$ as the only answer and attempt to find y	M1	
	$y = m$ or $(-1, m)$	A1	
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Question	Answer	Marks	Guidance
(b)	Equation of normal is $y-m=\dfrac{-1}{m}(x+1)$	*M1	Through *their P* with gradient $\dfrac{-1}{m}$, OE e.g. $y=\dfrac{-1}{m}x+\dfrac{m^2-1}{m}$. Allow use of the gradient of the curve as $-\dfrac{1}{\left[\frac{m}{(their\ x)^2}\right]}$ with *their* P. Coordinates of P must be in terms of *m* only.
	$\dfrac{-x}{m}-\dfrac{1}{m}+m=\dfrac{-m}{x} \Rightarrow x^2+x(1-m^2)-m^2\ [=0]$	DM1	OE Equating *their* normal equation to the equation of the curve and removing *x* from the denominator.
	$(x+1)(x-m^2)\ [=0] \Rightarrow x=m^2$	A1	or $x=\dfrac{m^2-1\pm\sqrt{1-2m^2+m^4+4m^2}}{2}=\dfrac{m^2-1\pm(m^2+1)}{2}=m^2$
	$y=\dfrac{-m}{m^2}=\dfrac{-1}{m}$	A1	or $\left(m^2,\dfrac{-1}{m}\right)$, ignore the coordinates of P.
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