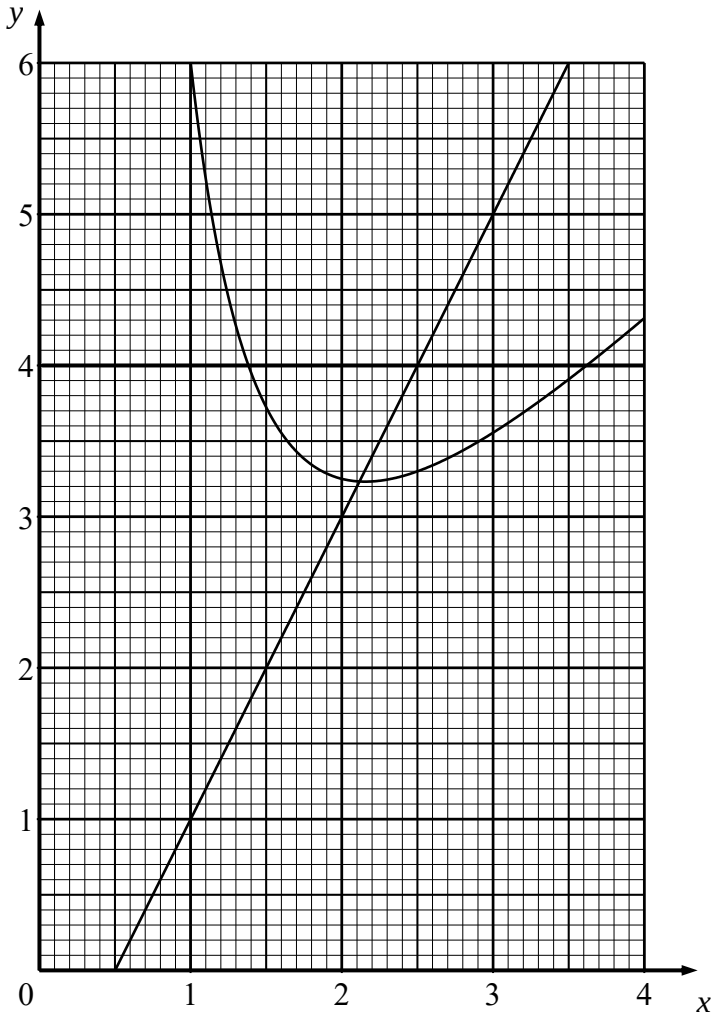
Question Number	Scheme	Marks
4		
(a)	$x^3 - 4x^2 + 5 = 0 \Rightarrow x - 4 + \frac{5}{x^2} = 0$	
	$x + \frac{5}{x^2} = 4$	M1
	Draw "$y = 4$", $x = 1.4,\ 3.6$	M1, A1 (3)
(b)	$x^3 - x^2 - 5 = 0 \Rightarrow x - 1 - \frac{5}{x^2} = 0$	
	$x - 1 - \frac{5}{x^2} = 0 \Rightarrow 2x - 1 = x + \frac{5}{x^2}$	M1A1
	Draw "$y = 2x - 1$", $x = 2.1$	dM1A1 (4)
		[7]

Part	Mark	Notes
(a)	M1	Divides through $x^3-4x^2+5=0$ by x^2 and rearranges to achieve as a minimum $x+\frac{5}{x^2}=k$ where k is a constant $\left[x-4+\frac{5}{x^2}=0\Rightarrow x+\frac{5}{x^2}=4\right]$
	M1	**Draw the line $y=k$** following through their value for k No line is M0
	A1	For the two values of $x = 1.4$ and $x = 3.6$ Condone answers given as coordinates provided they are completely correct. (1.4, 4) and (3.6, 4) Require both M marks for this mark.
(b)	M1	For setting $x+\frac{5}{x^2}=Ax+B\Rightarrow x^3+5=Ax^3+Bx^2\Rightarrow Ax^3-x^3+Bx^2-5=0$, and equating coefficients with x^3-x^2-5 $x^3(A-1)+Bx^2-5\equiv x^3-x^2-5$ to achieve as a minimum $A=(\pm 2),\ B=(\pm 1)$
	A1	For the correct straight line $y=2x-1$
	ALT – to find the line $y=2x-1$	
	M1	Divides through $x^3-x^2-5=0$ by x^2 and rearranges the equation to achieve as a minimum $\Rightarrow \pm 2x\pm 1=x+\frac{5}{x^2}$
	A1	For the correct straight line $y=2x-1$
	dM1	**Draws their $y=2x-1$ on the graph** and locates the point of intersection. Please check that they draw their line correctly. Coordinates for you to check are (0.5, 0) and (2.5, 4) No line is M0 This mark is dependent on the first M mark in (b)
	A1	For the correct value of $x = 2.1$ [allow $x = 2.2$] Can only score this mark from M1A1M1 Do not accept the answer given as coordinates.