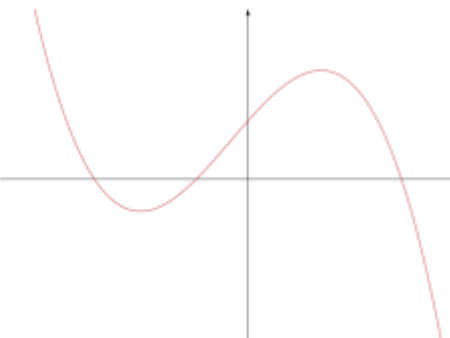


Question 9 – 4:

9(a)	<p>Correct sketch of negative cubic crossing the x-axis at -3, -1 and 3 and crossing the y-axis at 9</p> 	4	<p>B1 for any negative cubic shape with two turning points</p> <p>B2 for three intercepts only with x-axis labelled at -3, -1 and 3 or B1 for one or two correctly labelled x-intercepts</p> <p>B1 for intercept with y-axis labelled at 9</p> <p>If no graph drawn, SC1 for all four intercepts labelled on axes.</p>
9(b)(i)	<p>$3 - x + 3x - x^2$ or better or $3 + x + 3x + x^2$ or better or $9 [- 3x + 3x] - x^2$</p>	M1	<p>At least 3 of the four terms correct</p> <p>or for the correct expansion of all three brackets with all 8 terms correct</p>
	<p>Correct completion to [$y =$] $9 + 9x - x^2 - x^3$</p>	A1	<p>with no errors or omissions seen</p>
9(b)(ii)	<p>$9 - 2x - 3x^2 = 0$ oe</p>	B3	<p>B2 for $9 - 2x - 3x^2$ or B1 for two correct terms</p> <p>M1 for <i>their</i> derivative $= 0$ or stating $\frac{dy}{dx} = 0$</p>
	<p>$\frac{- -2 \pm \sqrt{(-2)^2 - 4 \times -3 \times 9}}{2 \times -3}$ oe</p> <p>OR</p> <p>$-\frac{1}{3} \pm \sqrt{\frac{9}{3} + \left(\frac{1}{3}\right)^2}$ oe</p>	B2	<p>FT <i>their</i> derivative</p> <p>B1FT for $\sqrt{(-2)^2 - 4(-3)(9)}$ or better</p> <p>or for $\frac{-(-2) + \sqrt{q}}{2 \times -3}$ or $\frac{-(-2) - \sqrt{q}}{2 \times -3}$</p> <p>OR</p> <p>B1 for $\left(x + \frac{1}{3}\right)^2$</p>
	<p>-2.10 and 1.43 final answer</p>	B2	<p>B1 for each or for answers -2.1 or $-2.097 \dots$ and 1.4 or 1.430 to 1.431 or SC1 for $-2.097 \dots$ and $1.43[0]$ to 1.431 seen in working or for -1.43 and 2.10 as final answer</p>
9(b)(iii)	<p>[$a =$] -6 [$b =$] 17</p>	3	<p>B2 for either a correct or b correct or for [$a =$] -5.04 or -5.049 to -5.05 and [$b =$] $16.9 \dots$ seen or M1 for substitution of one of <i>their</i> solutions into $9 + 9x - x^2 - x^3$ oe or SC1 for reversed answers, $a = 17$, $b = -6$</p>