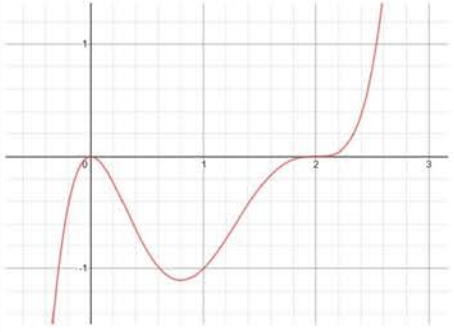
14	**(a)**		$2x(x-2)^3 + x^2 \times 3(x-2)^2$	**M1** **A1**	**3.1a** **1.1**	product rule & chain rule; allow one error	
			$(x-2)$ identified as factor	**M1**	**2.1**		
			$x(x-2)^2(5x-4)$ **cao**	**A1**	**1.1**		
				[4]			
			Alternative $5x^4 - 24x^3 + 36x^2 - 16x$	**M1** **A1**		NB from $x^5 - 6x^4 + 12x^3 - 8x^2$ expand brackets and differentiate; allow one error	
			$(x-2)$ identified as factor	**M1**			
			$x(x-2)^2(5x-4)$ **cao**	**A1**			
				[4]			

Question			Answer	Marks	AOs	Guidance	
14	(b)		*their* $\frac{dy}{dx} = 0$ **soi**	**M1**	**2.1**		
			$x = 0, 2, \frac{4}{5}$	**A1**	**1.1**		
			(0,0) and (2.0)	**A1**	**1.1**		
			(0.8, – 1.10592) or $(0.8, -\frac{3456}{3125})$	**A1**	**2.2a**	accept – 1.10592 to 2 sf or better	
				[4]			
14	(c)		2^{nd} derivative = – 16 at (0,0) so max 2^{nd} derivative = 5.76 at (0.8, – 1.10592) so min eg gradient = 1 at $x = 1$ and 33 at $x = 3$ so inflection at $x = 2$ eg $y = -1$ at $x = 1$ and $y = 9$ at $x = 3$ so inflection at $x = 2$ NB 2^{nd} derivative test is indecisive at $x = 2$	**B1** **B1** **B1**	**1.1** **1.1** **3.1a**	or for any of the three points: considers y or $\frac{dy}{dx}$ or $\frac{d^2y}{dx^2}$ either side of correct stationary point accompanied by suitable commentary; must see numerical values	
				[3]			
14	(d)			**M1** **A1**	**1.1** **1.1**	shape of curve correct with max, min and inflection correct intercepts marked on sketch or identified next to graph	
				[2]			