Polynomials Homework - Marking Scheme

Question	Main points of expected responses	
1 (a)	Show remainder is 0	•1 Table or substitution
1 (b)	Two brackets	•2 $(x-2)(2x^2+5x-3)=0$
	Fully factorized	•3 $(x-2)(2x-1)(x+3)=0$
	Roots	•4 $x=2$, $x=\frac{1}{2}$, $x=-3$
2 (a)	$a=16$	•1 Table with correct coefficients
		•2 $\boldsymbol{a=16}$
2 (b)	Fully factorized	•3 $\boldsymbol{(x-4)(x^2-x-20)=0}$ $\boldsymbol{(x-4)(x+4)(x-5)=0}$
	Roots	•4 $\boldsymbol{x=4}$, $\boldsymbol{-4}$, $\boldsymbol{5}$
3	Table and equation 1	•1 $a+b+1=0$
	Table and equation 2	•2 $12+2a+b=11$
	Tidying equation	•3 $a+b=-1$, $2a+b=-1$
		•4 Evidence of sim. equations strategy
	Solve for $\boldsymbol{a}$	•5 $\boldsymbol{a=0}$
	Solve for $\boldsymbol{b}$	•6 $\boldsymbol{b=-1}$
4	Gradient	•1 $m_{CD}=3$
	Perpendicular Gradient	•2 $m_{\perp}=-\frac{1}{3}$
	Midpoint	•3 $(3,0)$
	Equation	•4 $y-0=-\frac{1}{3}(x-3)$

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5	Differentiation	•1 $\frac{dy}{dx} = 3x^2 - 3$
	Gradient at $x = -1$	•2 $x = -1$ $\frac{dy}{dx} = 3x^2 - 3 = 0$
	Coordinate	•3 $x = -1$, $y = 3$ $Pt\ (-1, 3)$
	Equation	•4 $y - 3 = 0(x + 1)$ $y = 3$

Total 22 marks