Question	Answer	Marks	Guidance
(a)	Substitute $x = 2$, equate to zero	M1	Or divide by $x - 2$ and equate constant remainder to zero.
	Obtain a correct equation, e.g. $8a - 40 + 2b + 8 = 0$	A1	Seen or implied in subsequent work.
	Differentiate p(x), substitute $x = 2$ and equate result to zero	M1	Or divide by $x - 2$ and equate constant remainder to zero.
	Obtain $12a - 40 + b = 0$, or equivalent	A1	SOI in subsequent work.
	Obtain $a = 3$ and $b = 4$	A1	
	Alternative method for question (a)		
	State or imply $(x-2)^2$ is a factor	M1	
	$p(x) = (x-2)^2(ax+2)$	A1	
	Obtain an equation in b	M1	
	e.g. by comparing coefficients of x: $b = 4a - 8$	A1	
	Obtain $a = 3$ and $b = 4$	A1	
			SC If uses $x = -2$ in both equations allow **M1** and allow **A1** for $a = -3$, $b = -4$.
		5	

Question	Answer	Marks	Guidance
(b)	Attempt division by $(x-2)$	M1	The M1 is earned if division reaches a partial quotient of $ax^2 + kx$, or if inspection has an unknown factor $ax^2 + ex + f$ and an equation in e and/or f. Where a has the value found in part **5(a)**.
	Obtain quadratic factor $3x^2 - 4x - 4$	A1	
	Obtain factorisation $(3x+2)(x-2)(x-2)$	A1	
Alternative method for question (b)			
	State or imply $(x-2)^2$ is a factor	B1	
	Attempt division by $(x-2)^2$, reaching a quotient $ax + k$ or use inspection with unknown factor $cx + d$ reaching a value for c or for d	M1	
	Obtain factorisation $(3x+2)(x-2)^2$	A1	Accept $3\left(x+\frac{2}{3}\right)(x-2)^2$.
		3	