

Question number	Scheme	Marks
3 (a)	$x = 4$ $64p - 496 + 100 + 12 = 0$ $64p = 384$ $p = 6^*$	M1 A1 (2)
(b)	$(x - 4)(6x^2 - 7x - 3)$ $(x - 4)(2x - 3)(3x + 1)$ $x = 4, \frac{3}{2}, -\frac{1}{3}$	M1 A1 M1 A1 (4) [6]

Part	Mark	Additional Guidance	
(a)	M1	For substituting $x = 4$ into the given expression, equating the expression = 0 and attempting to solve for p	
	A1	For $p = 6$ * This is a show question so every step must be seen	
(b)	M1	For attempting to divide $6x^3 - 31x^2 + 25x + 12$ by $(x - 4)$ $\begin{array}{r} 6x^2 - 7x + k \\ x-4 \overline{) 6x^3 - 31x^2 + 25x + 12} \end{array}$ $\Rightarrow x - 4 \overline{) 6x^3 - 31x^2 + 25x + 12}$ (k is an integer)	
	A1	For finding the correct 3TQ $6x^2 - 7x - 3$	
	dM1	For an attempt to factorise their 3TQ to give $6x^2 - 7x - 3 = (2x - 3)(3x + 1)$	Condone $\left(x - \frac{3}{2}\right)\left(x + \frac{1}{3}\right)$
	A1	For the correct solution seen: $x = 4, \frac{3}{2}, -\frac{1}{2}$	
	ALT – equates coefficients		
	M1	For stating $6x^3 - 31x^2 + 25x + 12 = (x - 4)(Ax^2 + Bx + C) \Rightarrow$ $6x^3 - 31x^2 + 25x + 12 = Ax^3 + x^2(B - 4A) + x(C - 4B) - 4C$ Minimum required is $A = 6, B = -7$ and $C = k$	
	A1	For $A = 6, B = -7$ and $C = -3$	
	dM1	For an attempt to factorise their 3TQ to give $6x^2 - 7x - 3 = (2x - 3)(3x + 1)$	
	A1	For the correct solution seen: $x = 4, \frac{3}{2}, -\frac{1}{2}$	
	ALT – by inspection		
	M1	For finding the quadratic factor minimum required is $[(x - 4)](6x^2 - 7x + k)$	
	A1	For finding the correct 3TQ $6x^2 - 7x - 3$	
	dM1	For an attempt to factorise their 3TQ to give $6x^2 - 7x - 3 = (2x - 3)(3x + 1)$	
	A1	For the correct solution seen: $x = 4, \frac{3}{2}, -\frac{1}{2}$	
	Evidence of the 3TQ seen is required in part (b) $(x - 4)(2x - 3)(3x + 1) = 0 \Rightarrow x = 4, \frac{3}{2}, -\frac{1}{3}$ is M0		