Question	Answer	Marks	Partial Marks
7	$4x^2 + kx + k - 2 = 2x + 1$	**M1**	
	$4x^2 + (k-2)x + k - 3$ [*0] soi	**A1**	* can be <, >, =, ≤, ≥
	$(k-2)^2 - 4(4)(k-3)$	**M1**	
	$k^2 - 20k + 52 * 0$	**A1**	
	$k = \frac{-(-20) \pm \sqrt{(-20)^2 - 4(1)(52)}}{2}$	**M1**	
	$k = 10 \pm \sqrt{48}$ oe isw	**A1**	
	Alternative (using calculus) $2 = 8x + k$ oe	**(M1)**	
	$y = 4x^2 + (2-8x)x + 2 - 8x - 2$ or $y = -4x^2 - 6x$	**(M1)**	
	$0 = 4x^2 + 8x + 1$	**(A1)**	
	$x = \frac{-8 \pm \sqrt{8^2 - 4(4)(1)}}{8}$	**(M1)**	
	$x = -1 \pm \frac{\sqrt{48}}{8}$ oe	**(A1)**	
	for $k = 10 \pm \sqrt{48}$ oe	**(A1)**	
8(a)(i)	Valid explanation e.g. This ensures the argument of both logarithms is greater than 0	**B1**	
8(a)(ii)	$\log_a 6 = \log_a (y+3)^2$ oe	**B1**	
	$(y+3)^2 = 6$	**M1**	
	$y = -3 + \sqrt{6}$ oe only final answer	**A1**	