Question Number	Scheme	Notes	Marks
5	$\frac{4\sqrt{x}-3}{2x^2}=\frac{4\sqrt{x}}{2x^2}-\frac{3}{2x^2}=2x^{-\frac{3}{2}}-\frac{3}{2}x^{-2}$	M1: Writes as a sum of **two** terms. Award for $...x^p \pm ...x^q$ with $p \neq q$ **and** one of p or q correct (indices processed). Allow if one of p or q = 0 A1: $2x^{-\frac{3}{2}}-\frac{3}{2}x^{-2}$ oe - coefficients could be unsimplified but indices must be processed	**M1** **A1**
	$\int \frac{4\sqrt{x}-3}{2x^2}\,dx=-4x^{-\frac{1}{2}}+\frac{3}{2}x^{-1}+c$ dM1: Raises a power of x by one. Allow if this is done on a term individually. Powers may be unprocessed A1: For one correct term either $-4x^{-\frac{1}{2}}$ or $+\frac{3}{2}x^{-1}$ which may be left unsimplified but powers processed A1: Fully correct and simplified including an arbitrary constant e.g. $-4x^{-\frac{1}{2}}+\frac{3}{2}x^{-1}+c$ Accept equivalent answers such as $-\frac{4}{\sqrt{x}}+\frac{3}{2x}+c$ but ISW once a correct expression has been seen. Ignore spurious integral signs, "dx", or if labelled as derivative		**dM1** **A1** **A1**
			(5)
			Total 5

Question Number	Scheme	Notes	Marks
6	Question has: "Solutions relying on calculator technology are not acceptable"		
	$k\left(3x^2+8x+9\right)=2-6x \Rightarrow$ $3kx^2+(8k+6)x+9k-2=0$	Expresses equation correctly as a three term quadratic or states the correct *a*, *b* and *c* Accept $3kx^2+8kx+6x+9k-2=0$ with LHS terms in any order Could be implied by attempt at discriminant	**B1**
	$(8k+6)^2-4(3k)(9k-2)$ $\Rightarrow -44k^2+120k+36$ $\left\{\Rightarrow 11k^2-30k-9\right\}$ M1: Uses b^2-4ac correctly allowing for $a=\pm 3k, b=\pm 8k\pm 6$ and $c=\pm 9k\pm 2$ or $c=\pm 9k$. No need to expand for the M mark. If e.g., $a=3kx^2$ is used then the '*x*'s must disappear later. Could be seen within use of quadratic formula/CTS. May see e.g. $b^2...4ac$ with = or any inequality sign for ... A1: Any correct three term quadratic expression for b^2-4ac (may be under root sign)		**M1** **A1**
	e.g., $(11k+3)(k-3)=0 \Rightarrow k=3,-\frac{3}{11}$	dM1: For an attempt at finding the critical values via a valid non-calculator method. Must see the precise 3TQ that is then solved (see guidance). May have complex roots. Requires previous M mark. A1: Correct critical values. Could be labelled with *x* = ... or unlabelled	**dM1** **A1**
	$k<-\frac{3}{11},\ k>3$ M1: Chooses outside region appropriately for their real critical values. Must not be fortuitous from e.g., two errors that correct themselves. Signs may non-strict or one strict, one non-strict. Requires **FIRST** M mark. May use e.g., *x* Do not condone e.g., $-\frac{3}{11}>k>3$ A1: Correct region - any suitable notation but must be using *k* only. Do not condone $k_1<-\frac{3}{11},\ k_2>3$ ISW once a correct answer is seen even if an incorrectly modified answer follows. Condone "and" but not $\cap$ Note that e.g.,1110011 is possible		**M1** **A1**
			(7)
			Total 7