Paper 1		
Question number	Scheme	Marks
1	$b^2-4ac\geq 0$ $(k+5)^2-4k(3k+6)\geq 0$ $k^2+10k+25-12k^2-24k\geq 0$ $11k^2+14k-25\leq 0$ $(11k+25)(k-1)\leq 0$ [Critical values are $-\frac{25}{11}$ and 1] $-\frac{25}{11}\leq k\leq 1$ oe	M1 M1 A1 M1 M1A1
		Total 6 marks

Mark	**Notes**
M1	Uses b^2-4ac on the given quadratic equation with correct *a*, *b* and *c*; $a=3(k+2)$ $b=k+5$ $c=k$ **and** a correct substitution to obtain $(k+5)^2-4\times3\times(k+2)(k)$ **Note:** Accept for this mark any inequality, equals sign and even b^2-4ac used on its own.
M1	For attempting to expand the brackets and form a 3TQ in terms of *k*. Allow as a minimum at least one term correct. $k^2+10k+25-12k^2-24k\Rightarrow(-11k^2-14k+25)$ M0M1 is possible here.
A1	For the correct 3TQ with the correct inequality. **Note:** Allow > or < in place of $\geqslant$ and $\leqslant$ for this mark $-11k^2-14k+25\geqslant 0$ or $11k^2+14k-25\leqslant 0$
M1	For an attempt to solve their 3TQ, (provided it is a 3TQ) in terms of *k* by any acceptable method. See General Guidance for the definition of an attempt by factorisation, formula or completing the square. Use of calculators: if their 3TQ is incorrect, do not award this mark if working is not seen. $(11k+25)(k-1)=0\Rightarrow k=1,\ -\frac{25}{11}$
M1	For forming the correct inequality with **their** critical values, provided they have been obtained from a 3TQ, must be a closed region. $\left(-\frac{25}{11}\leqslant k\leqslant 1\right)$ ft their values from their $-11k^2+14k-25\geqslant 0$ or $11k^2-14k+25\leqslant 0$
A1	For the correct inequality. $-\frac{25}{11}\leqslant k\leqslant 1$