Question Number	Scheme/Notes		Marks
3	$\dfrac{x+k}{x-3} \geqslant \dfrac{3x}{x+4}$		
(a)	$\dfrac{x+k}{x-3} - \dfrac{3x}{x+4} \geqslant 0$ $\dfrac{(x+k)(x+4)-3x(x-3)}{(x-3)(x+4)} \geqslant 0$	$(x-3)(x+4)^2(x+k) \geqslant 3x(x+4)(x-3)^2$ $(x-3)(x+4)^2(x+k)-3x(x+4)(x-3)^2 \geqslant 0$ $\{\Rightarrow (x-3)(x+4)[(x+4)(x+k)-3x(x-3)] \geqslant 0\}$	M1
	Brings terms to one side and attempts common denominator or multiplies by $(x-3)^2(x+4)^2$ and brings terms to one side. See note below.		
	$(x-3)(x+4)(x^2+4x+kx+4k-3x^2+9x) \geqslant 0$ $(x-3)(x+4)(-2x^2+(k+13)x+4k) \geqslant 0$ $(x-3)(x+4)(2x^2-(k+13)x-4k) \leqslant 0$	M1: Reaches $(x-3)(x+4)(2x^2+...x+...) \leqslant 0$ A1: Correct inequality from fully correct work	M1 A1
			(3)
(b)	$k=2 \Rightarrow (x-3)(x+4)(2x^2-15x-8) \leqslant 0$ $2x^2-15x-8=(2x+1)(x-8)=0 \Rightarrow x=-\dfrac{1}{2},\ 8$	Substitutes $k = 2$ and solves quadratic.	M1
	If restarting with $\dfrac{x+2}{x-3} \geqslant \dfrac{3x}{x+4}$ then allow for solving the equivalent quadratic however attained from their method (e.g. cross multiplying).		
	$(x-3)(x+4)(2x+1)(x-8) \leqslant 0$ $\Rightarrow$ critical values $x=-4,\ -\dfrac{1}{2},\ 3,\ 8$ $\Rightarrow \alpha <,\leqslant x <,\leqslant \beta, \gamma <,\leqslant x <,\leqslant \delta$	Identifies the correct shape of the regions with cvs $-4,\ 3$ and their $-\dfrac{1}{2}$ and 8. Inequality strictness may be incorrect but the ascending order of roots with correct directions of inequalities must be given	M1
	$\Rightarrow -4 < x \leqslant -\dfrac{1}{2},\quad 3 < x \leqslant 8$	Correct regions condoning errors with inequality strictness	A1
		Fully correct solution set.	A1
			(4)
			Total 7

Further Notes

(a)

For those with with an **initial** incorrect step of inequalities (e.g. multiplying through by $(x-3)(x+4)$ initially and then again later), max M0M1A0 can be scored. If an initial correct step putting over a common denominator is followed by similar partial multiplications which are incorrect but eventually recovered, then M1M1A0 may be scored.

(b)

1st M for solving the quadratic – accept correct roots found for their quadratic or else usual rules if method shown.

2nd M you are looking for the "second" and "fourth" portions of the number line with their ascending roots.

Final mark, allow any suitable notation e.g., $\left(-4, -\dfrac{1}{2}\right], (3, 8]$. Accet with a comma, "and" or "or" between but if using set notation then they must be using the union (intersection is final A0 but alllow the M and first A).