	Squaring both sides - example: $3(x+7)=4x+2\sqrt{2}x$ (M1) $\Rightarrow 2\sqrt{2}\,x=21-x\Rightarrow\left(2\sqrt{2}\,x\right)^2=(21-x)^2\Rightarrow 8x^2=441-42x+x^2\Rightarrow 7x^2+42x-441=0$ Squares and obtains a 3TQ (dM1) Correct 3TQ (A1) $\Rightarrow x^2+6x-63=0\Rightarrow x=\dfrac{-6\pm\sqrt{6^2-4(1)(-63)}}{2(1)}$ Solves via valid non-calculator method (M1) $\Rightarrow x=\frac{-6\pm\sqrt{288}}{2}\Rightarrow x=-3+6\sqrt{2}$ This answer only (A1)	**(5)**
		Total 7

Question Number	Scheme	Notes	Marks
2	Question has: "Solutions relying on calculator technology are not acceptable"		
(a)	$\{y=\}\, x(x+3)(x-2) = x^3 + x^2 - 6x$	Correct expansion. Terms collected. Implied by a correct answer	**B1**
	$\left\{\frac{\mathrm{d}y}{\mathrm{d}x}=\right\} 3x^2 + 2x - 6$ M1: For reducing the power of x by one for at least one term Indices may not be processed. Allow if $\ldots x^n \rightarrow \ldots x^{n-1}$ seen anywhere in an attempt at the product rule which may be partial A1: Correct expression as shown (terms in any order) Must be seen in part (a).		**M1** **A1**
			(3)
(b)	$\frac{\mathrm{d}y}{\mathrm{d}x} = 3x^2 + 2x - 6 \geq 2 \Rightarrow$ $3x^2 + 2x - 8 = 0 \Rightarrow (3x-4)(x+2) = 0 \Rightarrow \{x=\} -2, \frac{4}{3}$	M1: Sets their quadratic = 2 (or uses any inequality sign) and attempts to find the critical values by solving a 3TQ (not a 2TQ) via a valid non-calculator method. M0 if 0 is used instead of 2. Roots may be complex. A1: Critical values of $-2,\ \frac{4}{3}$	**M1** **A1**
	$x \leq -2,\quad x \geq \frac{4}{3}$ M1: Selects the outside region appropriately for their real critical values. Do not condone e.g., $-2 \geq x \geq \frac{4}{3}$ Can follow previous M0 provided they have solved a 2 or 3 term quadratic with a positive x^2 coefficient, possibly by calculator (if so, must be correct roots for their equation - to 3sf if necessary). Allow if the work shows that they have solved e.g., $3x^2 + 2x - 6 = 0 \quad \left\{\Rightarrow x = \frac{-1 \pm \sqrt{19}}{3}\right\}$ but do not accept using these roots from $3x^2 + 2x - 8 = 0$ or e.g., $3x^2 + 2x - 6 \geq 2$ May have strict inequalities or one strict, one non-strict. A1: Correct region. Any appropriate notation. Condone "and" but not $\cap$.		**M1** **A1**

	Must be using x for both parts of the region not e.g., $x_1 \leq -2, \quad x_2 \geq \frac{4}{3}$ ISW once a correct answer is seen even if an incorrectly modified answer follows. Note that 0011 or 0010 are possible. Answer only is no marks but e.g., $3x^2 + 2x - 6 \geq 2, \quad x \leq -2, \quad x \geq \frac{4}{3}$ is 0011	
		(4)
		Total 7