Question Number	Scheme	Marks
6 (a)	$y=\dfrac{4x+3}{x-2}\Rightarrow yx-2y=4x+3$ $\Rightarrow yx-4x=2y+3$ | $y=4+\dfrac{11}{x-2}\Rightarrow y-4=\dfrac{11}{x-2}$ $x-2=\dfrac{11}{y-4}$	M1
	$\Rightarrow x=\dfrac{2y+3}{y-4}\Rightarrow \mathrm{f}^{-1}(x)=\dfrac{2x+3}{x-4}$ | $\Rightarrow x=2+\dfrac{11}{y-4}\Rightarrow \mathrm{f}^{-1}(x)=2+\dfrac{11}{x-4}$	A1
	$x\neq 4$	B1
		(3)
(b)	$\mathrm{ff}(x)=\dfrac{4\times\dfrac{4x+3}{x-2}+3}{\dfrac{4x+3}{x-2}-2}$ or $\mathrm{ff}(x)=4+\dfrac{11}{4+\dfrac{11}{x-2}-2}$	M1
	$=\dfrac{4\times(4x+3)+3(x-2)}{4x+3-2(x-2)}=\dfrac{19x+6}{2x+7}$	dM1 A1
		(3)
(c)	Either $x=1$ or $y=38$	M1
	$(1, 38)$	A1
		(2)
		(8 marks)

(a)

M1: Attempts to change the subject. May interchange x and y at the start or work towards $x = \ldots$ Must proceed as far as getting the two x terms on one side of the equation and the terms not in x on the other or equivalent if x and y are swapped first. Alternatively may divide through first, gather terms and proceed as far as cross multiplying.

A1: $\mathrm{f}^{-1}(x)=\dfrac{2x+3}{x-4}$ (oe) but accept $y=\dfrac{2x+3}{x-4}$ and even $\mathrm{f}^{-1}=\dfrac{2x+3}{x-4}$ or e.g. $\mathrm{f}(x)^{-1}=\dfrac{-2x-3}{4-x}$ Accept equivalent simplified forms.

B1: States correct domain $x\neq 4$ $(x\in\mathbb{R})$ Ignore reference to $y\neq 2$ but extra x exclusions is B0.

(b)

M1: Attempts to replace both the x's in $\dfrac{4x+3}{x-2}$ by $\dfrac{4x+3}{x-2}$. Condone a slip such as missing the "+3" as long as the attempt to replace both x's is seen. Alternatively if dividing through look for the attempt to replace the x by $4+\dfrac{11}{x-2}$ condoning a slip missing the extra $"-2"$

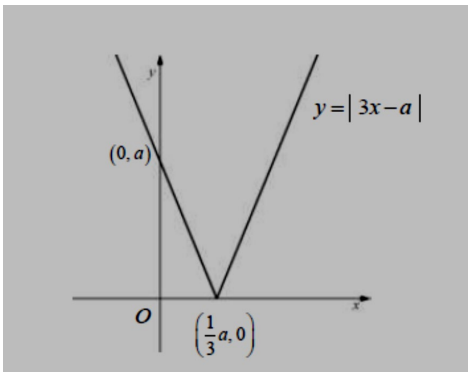
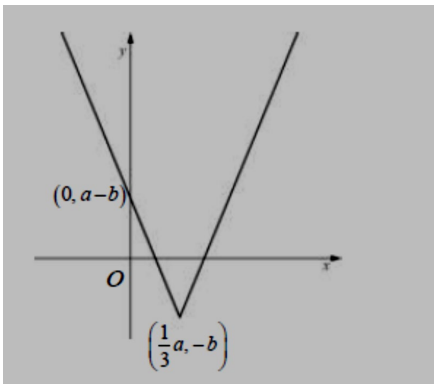
dM1: Full attempt to form a fraction of the required form by multiplying all terms in the numerator and denominator by $(x-2)$ If dividing through they must combine to a single fraction.
An equally valid alternative is to put both numerator and denominator over common factors of $(x-2)$

A1: $\dfrac{19x+6}{2x+7}$ but allow equivalent fractions of this form.

(c) Mark only the final attempt here as the candidate may "build up" their answer in stages.
Also watch out for the answer stated next to the question, which can be taken as their final answer.

M1: Either $x=1$ or $y=38$

A1: (1, 38) but allow to be written out separately, or with the brackets omitted.

Question Number	Scheme	Marks
7 (a)(i)	 Shape	B1
	Vertex $\left(\frac{1}{3}a,0\right)$	B1
	y intercept $(0,a)$	B1
(a)(ii)	 Shape	B1ft
	Vertex $\left(\frac{1}{3}a,-b\right)$	B1ft
	y intercept $(0,a-b)$	B1ft
		(6)
(b)	Attempts to solve $-3x+a-b=5x \Rightarrow x=...$	M1
	$\Rightarrow x=\frac{a-b}{8}$ ONLY	A1
		(2)
		(8 marks)

Note: accept both diagrams on the same sketch as long as the information for each is clear.

If two graphs are given unlabelled, treat their first as part (a)(i) and their second as part (a)(ii).

(a)(i)

B1: A V shaped curve sitting on the positive x-axis and appearing in at least quadrant 1. Don't be too concerned about the graph being non symmetrical unless it appears wildly incorrect

B1: The vertex is on the positive x- axis and is marked $\left(\frac{1}{3}a,0\right)$ but condone $(x=)\frac{1}{3}a$ which may be seen as the intercept on the graph. May be scored from an incorrect shape for the graph, but must have a single vertex on the x-axis.

B1: The graph passes through the positive y-axis at $(0,a)$ but condone $(y=)a$ which may be seen as the intercept on the graph.

SC If a "Y" shape is given, if part is dashed ignore the dashed line, if all are solid withhold the first B but allow B0B1B1 if vertex and positive intercept are correct.