Question	Answer	Marks	Guidance
(a)	$y=\dfrac{x^2-4}{x^2+4}$ leading to $(x^2+4)y=(x^2-4)$ leading to $x^2y+4y=x^2-4$	***M1**	For clearing denominator and expanding brackets. If swap variables first, look for $y^2x+4x=y^2-4$.
	$x^2y-x^2=-4y-4$ leading to $x^2(1-y)=4y+4$ leading to $x^2=\ldots$	**DM1**	For making x^2 the subject. If swap variables first, look for $y^2(1-x)=4x+4\Rightarrow y^2=\ldots$
	$x^2=\dfrac{4y+4}{1-y}$ leading to $x=\sqrt{\dfrac{4y+4}{1-y}}$ leading to $[\mathrm{f}^{-1}(x)]=\sqrt{\dfrac{4x+4}{1-x}}$	**A1**	OE e.g. $\sqrt{\dfrac{-4x-4}{x-1}}$ without ± in final answer.
	Alternative method for Q6(a)		
	$x=\dfrac{y^2-4}{y^2+4}$ leading to $x=1-\dfrac{8}{y^2+4}$ leading to $x-1=\dfrac{-8}{y^2+4}$	***M1**	For division and reaching $x-1=\ldots$ $(\text{or } y-1=\ldots)$
	$y^2+4=\dfrac{-8}{x-1}$ leading to $y^2=\dfrac{-8}{x-1}-4$	**DM1**	For making $y^2\left(\text{or } x^2\right)$ the subject.
	$[y=]\left[\mathrm{f}^{-1}(x)\right]=\sqrt{\dfrac{-8}{x-1}-4}$	**A1**	OE without ± in final answer.
		3	

Question	Answer	Marks	Guidance
(b)	$1-\dfrac{8}{x^2+4}=\dfrac{x^2+4}{x^2+4}-\dfrac{8}{x^2+4}\left[=\dfrac{x^2+4-8}{x^2+4}\right]=\dfrac{x^2-4}{x^2+4}$	**M1 A1**	Using common denominator or division to reach 1. Remainder -8. WWW
	$0<\mathrm{f}(x)<1$	**B1 B1**	B1 for each correct inequality. B0 if contradictory statement seen. Accept $\mathrm{f}(x)>0,\ \mathrm{f}(x)<1;\ 1>\mathrm{f}(x)>0;\ (0,1)$ **SC B1** for $0 \leqslant \mathrm{f}(x) \leqslant 1$.
		4	
(c)	Because the range of f does not include the whole of the domain of f (or any of it)	**B1**	Accept an answer that includes an example outside the domain of f, e.g. $\mathrm{f}(4)=\dfrac{12}{20}$. Must refer to the domain or > 2. Need not explicitly use the term 'domain' but must not refer just to the range.
		1	