(c)(i)	$\{x_1 = 0 \Rightarrow x_2 =\} \frac{5}{10} = \frac{1}{2} \Rightarrow x_3 = \frac{2(0.5)^2 + 5}{4e^{2(0.5)} + 6} = ...$ $= 0.3259620992$ M1: Substitutes $x = 0$ into the iterative formula and then substitutes the answer into the formula and achieves a value. Condone slips if there is working but if just a value/values is/are given we must see awrt 0.326 (3sf) A1: Awrt 0.3260 (4sf) and accept "0.326" May just give answer only. Accept if unlabelled/mislabelled but mark their final answer to (i) in such cases (but isw if clearly followed by just rounding)	**M1** **A1**
(c)(ii)	$\{\alpha =\}$ 0.3675 $\{0.3674712656\}$ Awrt 0.3675. **Treat as a B mark** so 001 is a possible mark profile. Accept if unlabelled/mislabelled but mark their final answer to (ii) in such cases (but isw if followed by rounding)	**A1**
		(3)
		(Total 8 marks)

Question Number	Scheme	Notes	Marks
2	**"In this question you must show all stages of your working. Solutions relying entirely on calculator technology are not acceptable."** $f(x)=3+4e^{2x} \quad x\in\mathbb{R}$ $\quad g(x)=\sqrt{x+5} \quad x\in\mathbb{R},\ x>-5$		
(a)	$f(x)>3$	$f(x)>3$ oe e.g., $(3,\infty)$ not $(3,\infty]$ Allow $y>3$, range > 3, f > 3, " > 3" but not e.g., $x>3$. No need for "$\mathbb{R}$"	**B1**
			(1)
(b)	$g^{-1}(x)=x^2-5$ $x>0$ oe	M1: Swaps letters and rearranges to find the inverse (either order) and achieves the form $\{y=\}\pm x^2\pm 5$ A1: $\{g^{-1}(x)=\}x^2-5$ Ignore labelling B1: x^2-5 **and** $x>0$ oe e.g., $0<x<\infty$	**M1** **A1** **B1**
			(3)
(c)	$f\left(\ln\sqrt{7}\right)=3+4\times 7=31$ $\Rightarrow gf\left(\ln\sqrt{7}\right)=g(31)=...,\ 6$ or $gf(x)=\sqrt{3+4e^{2x}+5}$ $\Rightarrow gf\left(\ln\sqrt{7}\right)=\sqrt{3+4\times 7+5}=...,\ 6$	M1: Finds a value $gf\left(\ln\sqrt{7}\right)$ via a credible method. Only condone slips if there is sufficient working that makes their intention clear. So do not accept just $f\left(\ln\sqrt{7}\right)=\alpha,\ g(\alpha)=\beta$ or $gf\left(\ln\sqrt{7}\right)=\beta$ unless it is correct A1: 6 (not ± 6) Accept answer only.	**M1** **A1**
			(2)
(d)	$3+4e^{2a}=8$ B1: Sets $3+4e^{2a}=8$ not just g(59) Condone $=\pm 8$. May use another letter for a provided it is not subsequently changed into a different expression. Do not award just for $3+4e^{2\sqrt{a^2-5+5}}=8$ - the exponential part must be fully processed. May be scored later in their answer		**B1**
	$3+4e^{2a}=8\Rightarrow e^{2a}=...\ \left\{\frac{5}{4}\right\}\ \Rightarrow a=...,\ a=\ln\left(\frac{\sqrt{5}}{2}\right)$ M1: Makes e^{2a} the subject, from an equation of the form $3+4e^{2a}=k\ (k>3)\Rightarrow 4e^{2a}=c,\ c\neq k$ **and** takes lns of both sides (the step when lns are applied must be correct for their equation and note e.g., $\ln\left(e^{2a}\right)$ or $2a\ln e$ is not far enough) **and** proceeds to a real value for a (which may be decimal) so do not allow ln (negative) A1: $(a=)\ \ln\left(\frac{\sqrt{5}}{2}\right)$ or exact equivalent in the required "ln p" form e.g. $\ln\left(\sqrt{1.25}\right)$, $\ln\left(\sqrt{\frac{5}{4}}\right)$, $\ln\left(\frac{\sqrt{5}}{\sqrt{4}}\right)$ but not just e.g., $\ln\left(\frac{5}{4}\right)^{\frac{1}{2}}$ or $\ln\left(\left(\frac{5}{4}\right)^{\frac{1}{2}}\right)$ or $\frac{1}{2}\ln 1.25$		**M1** **A1**

	No other unrejected answers. Condone throughout if e.g., x is used for a	
		(3)
		(Total 9 marks)