Question	Answer	Marks	AOs	Guidance	
13	let $u = 1+\sqrt{x}$ $\quad du = \frac{1}{2}x^{-\frac{1}{2}}\,dx$	M1	3.1a	substituting $u = 1+\sqrt{x}$ or $w = \sqrt{x}$	Evidence of method must be seen
	$\Rightarrow dx = 2(u-1)du$	A1	1.1	$dx = 2(u-1)\,du$ or $dx = 2w\,dw$	
	$\Rightarrow \int_0^1 \frac{1}{1+\sqrt{x}}dx = \int_1^2 \frac{2(u-1)}{u}du$	A1	1.1	$\frac{2(u-1)}{u}(du)$ or $\frac{2w}{(w+1)}(dw)$	
	$= \int_1^2 \left(2-\frac{2}{u}\right)du$	M1	3.1a	splitting fraction or dividing to get $2 - \frac{2}{(w+1)}$ (or substituting $u = w+1 \Rightarrow$ $\frac{2(u-1)}{u}$ and then splitting fraction)	Evidence of method must be seen
	$= \left[2u - 2\ln u\right]_1^2$	A1	1.1	or $\left[2w - 2\ln(w+1)\right]_0^1$ if still in terms of w	
	$= 4 - 2\ln 2 - 2 = 2 - 2\ln 2$ **or** $2 - \ln 4$	A1	1.1	cao	
		[6]			