Question	Scheme	Marks	AOs
1	$2^x \times 4^y = \dfrac{1}{2\sqrt{2}} \quad \left\{ = \dfrac{\sqrt{2}}{4} \right\}$		
Special Case	If 0 marks are scored on application of the mark scheme then allow Special Case B1 M0 A0 (total of 1 mark) for any of • $2^x \times 4^y \to 2^{x+2y}$ • $2^x \times 4^y \to 4^{\frac{1}{2}x+y}$ • $\dfrac{1}{2^x 2\sqrt{2}} \to 2^{-x-\frac{3}{2}}$ • $\log 2^x + \log 4^y \to x\log 2 + y\log 4$ or $x\log 2 + 2y\log 2$ • $\ln 2^x + \ln 4^y \to x\ln 2 + y\ln 4$ or $x\ln 2 + 2y\ln 2$ • $y = \log\left(\dfrac{1}{2^x 2\sqrt{2}}\right)$ o.e. {base of 4 omitted}		
Way 1	$2^x \times 2^{2y} = 2^{-\frac{3}{2}}$	B1	1.1b
	$2^{x+2y} = 2^{-\frac{3}{2}} \Rightarrow x + 2y = -\dfrac{3}{2} \Rightarrow y = ...$	M1	2.1
	E.g. $y = -\dfrac{1}{2}x - \dfrac{3}{4}$ or $y = -\dfrac{1}{4}(2x+3)$	A1	1.1b
		(3)	
Way 2	$\log(2^x \times 4^y) = \log\left(\dfrac{1}{2\sqrt{2}}\right)$	B1	1.1b
	$\log 2^x + \log 4^y = \log\left(\dfrac{1}{2\sqrt{2}}\right)$ $\Rightarrow x\log 2 + y\log 4 = \log 1 - \log(2\sqrt{2}) \Rightarrow y = ...$	M1	2.1
	$y = \dfrac{-\log(2\sqrt{2}) - x\log 2}{\log 4} \quad \left\{ \Rightarrow y = -\dfrac{1}{2}x - \dfrac{3}{4} \right\}$	A1	1.1b
		(3)	
Way 3	$\log(2^x \times 4^y) = \log\left(\dfrac{1}{2\sqrt{2}}\right)$	B1	1.1b
	$\log 2^x + \log 4^y = \log\left(\dfrac{1}{2\sqrt{2}}\right) \Rightarrow \log 2^x + y\log 4 = \log\left(\dfrac{1}{2\sqrt{2}}\right) \Rightarrow y = ...$	M1	2.1
	$y = \dfrac{\log\left(\dfrac{1}{2\sqrt{2}}\right) - \log(2^x)}{\log 4} \quad \left\{ \Rightarrow y = -\dfrac{1}{2}x - \dfrac{3}{4} \right\}$	A1	1.1b
		(3)	
Way 4	$\log_2(2^x \times 4^y) = \log_2\left(\dfrac{1}{2\sqrt{2}}\right)$	B1	1.1b
	$\log_2 2^x + \log_2 4^y = \log_2\left(\dfrac{1}{2\sqrt{2}}\right) \Rightarrow x + 2y = -\dfrac{3}{2} \Rightarrow y = ...$	M1	2.1
	E.g. $y = -\dfrac{1}{2}x - \dfrac{3}{4}$ or $y = -\dfrac{1}{4}(2x+3)$	A1	1.1b
		(3)	
			(3 marks)