Question	Answer	Marks	Guidance
3(b)	$e^{x^2-3-(7-x^2)} = 25$ oe	**M1**	Arrange as equation with one power of e
	$2x^2 - 10 = \ln 25$	**A1**	
	$x^2 = \dfrac{\ln 25 + 10}{2}$	**A1**	
	$x = \pm\sqrt{\frac{\ln 25+10}{2}}$ oe or $\pm\sqrt{\ln 5 + 5}$	**A1**	isw
4(a)	Many-many (mapping) oe or A vertical line meets graph more than once (or twice) oe	**B1**	
4(b)	<table><tr><td></td><td>✓</td><td></td></tr><tr><td>✓</td><td></td><td>✓</td></tr><tr><td></td><td>✓</td><td></td></tr><tr><td>✓</td><td></td><td></td></tr></table>	**4**	**B1** for each correct row
4(c)(i)	$\sin x \geqslant \frac{1}{2}$	**M1**	May be implied. Allow >
	$a = 150$ seen	**A1**	
4(c)(ii)	$0 \leqslant \text{gf}(x) \leqslant \frac{1}{\sqrt{2}}$	**2**	**B1** for each correct value with correct sign associated with it
4(c)(iii)	No. Range of g $\not\subset$ domain of g oe	**B1**	
5(a)	$\frac{10}{2}(6 + 9d) = 4 \times \frac{5}{2}(6 + 4d)$	**M2**	**M1** for either sum correct
	$d = 6$	**A1**	

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