Question	Answer	Marks	Guidance
1(a)	3	**B2**	**B1** for g(0) = 0 or [fg(x) =] $2\sin(e^{3x} - 1) + 3\cos(e^{3x} - 1)$ soi
1(b)	$gg(x) = e^{3\left(e^{3x}-1\right)} - 1$ oe, isw	**B1**	
1(c)	$3y = \ln(x+1)$ or $3x = \ln(y+1)$ **and** swops the variables at some point	**M1**	condone one error
	$g^{-1}(x) = \frac{1}{3}\ln(x+1)$ soi	**A1**	
	[x =] 4	**A1**	
	Alternative method		
	$x = g(\frac{1}{3}\ln 5)$ soi	**(B1)**	
	$e^{3\left(\frac{1}{3}\ln 5\right)} - 1$ oe	**(M1)**	
	[x =] 4	**(A1)**	
2	Uses $b^2 - 4ac$ [*0] $k^2 - 4(4k - 15)$ [*0]	**M1**	where * is any inequality sign or =;
	$k^2 - 16k + 60$ [*0]	**A1**	
	$(k-6)(k-10)$[*0]	**DM1**	**FT** *their* 3-term quadratic; **dep** on previous **M1**
	$6 < k < 10$	**A1**	Mark final answer
	Alternative method		
	$2x + k$ [= 0]	**(M1)**	
	$-\frac{k^2}{4} + 4k - 15$[*0] oe or $-x^2 - 8x - 15$[*0] oe	**(A1)**	
	Solves or factorises $(k-6)(k-10)$[*0] or $(x + 5)(x + 3)$ [*0] **and** $x = -5$, $x = -3$	**(DM1)**	**FT** *their* 3-term quadratic; **dep** on previous **M1**
	$6 < k < 10$	**(A1)**	Mark final answer