<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td rowspan="5">5(b)</td><td>$-2\cos 3t \quad (+c)$</td><td>2</td><td>B1 for $k\cos 3t$, $k \neq 18$, $k < 0$</td></tr>
<tr><td>Displacement $= 2 - 2\cos 3t$</td><td>M1</td><td>For attempt to find value of c</td></tr>
<tr><td>2.92</td><td>A1</td><td></td></tr>
<tr><td>Alternative
$-2\cos 3t$</td><td>(2)</td><td>B1 for $k\cos 3t$, $k \neq 18$, $k < 0$</td></tr>
<tr><td>$\left[-2\cos 3t\right]_0^{5.6}$
$= \left(-2\cos 16.8\right) - \left(-2\right)$</td><td>(M1)</td><td>For correct application of limits using their $k\cos 3t$, $k \neq 18$, $k < 0$</td></tr>
<tr><td>2.92</td><td>(A1)</td><td></td></tr>
<tr><td>6(a)</td><td><table><tr><th>Expression</th><th>Function notation</th></tr><tr><td>0</td><td>g″</td></tr><tr><td>$4x$</td><td>f′</td></tr><tr><td>$8x^2 + 8x + 2$</td><td>fg</td></tr><tr><td>$4x + 3$</td><td>g^2</td></tr><tr><td>$\frac{x-1}{2}$</td><td>g^{-1}</td></tr></table></td><td>5</td><td>B1 for each one correct</td></tr>
<tr><td>6(b)(i)</td><td>$a = 1$</td><td>B1</td><td></td></tr>
<tr><td>6(b)(ii)</td><td>$\text{h}(x) \geqslant 3$</td><td>B1</td><td></td></tr>
<tr><td rowspan="3">6(b)(iii)</td><td>$x = (y-1)^2 + 3$
$y = 1 + \sqrt{x-3}$</td><td>M1</td><td>For a correct attempt to find the inverse, allow one sign error</td></tr>
<tr><td>$\text{h}^{-1}(x) = 1 + \sqrt{x-3}$</td><td>A1</td><td>Must be using correct notation</td></tr>
<tr><td>$x \geqslant 3$</td><td>B1</td><td>Must be using correct notation</td></tr>
</table>

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Question	Answer	Marks	Guidance
7(a)	$\frac{dy}{dx}=\frac{\left((x+5)\times\frac{3}{2}\times2(2x+1)^{\frac{1}{2}}-(2x+1)^{\frac{3}{2}}\right)}{(x+5)^2}$	**3**	**B1** for $\frac{3}{2}\times2(2x+1)^{\frac{1}{2}}$ oe **M1** for attempt to differentiate a quotient or product **A1** for all terms other than $\frac{3}{2}\times2(2x+1)^{\frac{1}{2}}$ correct
	$\frac{(2x+1)^{\frac{1}{2}}}{(x+5)^2}(x+14)$	**A1**	
7(b)	When $\frac{dy}{dx}=0$, $x=-14$ and $x=-0.5$ but $x\geqslant0$ so no stationary point	**B1**	FT on *their* $(x+14)$
7(c)	$\frac{5\sqrt{3}p}{12}$, $\frac{15\sqrt{3}p}{36}$ or $0.722p$	**2**	**M1** for calculation of $\frac{dy}{dx}$ when $x=1$ and multiplication by p
7(d)	$\frac{25\sqrt{3}}{24}$ or 1.80 oe	**2**	**M1** for multiplication of *their* $\frac{dy}{dx}$ calculated in **(c)** by 2.5, must be numeric
8(a)(i)	17640	**B1**	
8(a)(ii)	Ends in a 5: 2160 or ${}^6P_1\times{}^6P_4$	**B1**	
	Ends in a 0 : 2520 or ${}^7P_1\times{}^6P_4$	**B1**	
	4680	**B1**	
8(a)(iii)	Starts with 85 : 360 Starts with 86 : 360 Starts with 87 : 360 Starts with 89: 360 oe 1440 or $4\times{}^6P_4$	**B1**	
	Starts with 9 : 2520 or ${}^7P_5$	**B1**	
	3960	**B1**	