

Question			Answer	Marks	AO	Guidance	
7	(a)		$x = 14t$ $y = 7t - \frac{1}{2}gt^2 + 5$ So the position vector is $\begin{pmatrix} 14t \\ 7t - 4.9t^2 + 5 \end{pmatrix}$	B1 M1 A1	1.1b 1.1b 2.5	must be $X = \dots$ or seen as the first component of the vector. Do not award for an expression that adds a vector to a scalar allow without +5, or if -5 seen Do not award for an expression that adds a vector to a scalar Must be a single vector. Accept $\frac{1}{2}g$ in final answer Accept $14t\mathbf{i} + (7t - 4.9t^2 + 5)\mathbf{j}$	SC1 for $\begin{pmatrix} 7t - 4.9t^2 + 5 \\ 14t \end{pmatrix}$ or $\begin{pmatrix} 14t - 4.9t^2 + 5 \\ 7t \end{pmatrix}$
7	(b)		Lands when $y = 0$ $7t - 4.9t^2 + 5 = 0$ $t = 1.95$ gives $x = 14t = 27.3 \text{ m}$	M1 A1 B1	3.1b 1.1b 1.1b	Award for correct quadratic or an attempt to find value of t when their quadratic $y = 0$ cao FT their t and their linear expression for x ISW where candidates find the distance from the point of projection	
				[3]			