Question			Answer	Marks	AO	Guidance	
6	(a)		Considers both $f(0.5)$ and $f(0.6)$ where $f(x) = \pm\{6\arcsin(2x-1) - x^2\}$	**M1**	**1.1**	With at least one correct value – values should be given to at least 2 sf (rot)	Allow degrees for **M1** only: $f(0.6) = 68.8617...$
			$f(0.5) = -0.25 < 0,\ f(0.6) = 0.8481... > 0$ change of sign indicates that the root lies between 0.5 and 0.6	**A1** **[2]**	**2.4**	Correct values together with explanation in words (change of sign) and conclusion	
6	(b)		$6\arcsin(2x-1) - x^2 = 0 \Rightarrow \arcsin(2x-1) = \frac{1}{6}x^2$ So $2x - 1 = \sin\left(\frac{1}{6}x^2\right)$	**M1**	**1.1**	Correct order of operations to get $2x - 1 = \sin\left(kx^2\right)$	$k \neq 0$
			$x = \frac{1}{2} + \frac{1}{2}\sin\left(\frac{1}{6}x^2\right)$	**A1** **[2]**	**2.2a**	$p = \frac{1}{2},\ q = \frac{1}{2}$ and $r = \frac{1}{6}$ (oe)	
6	(c)		$(x_0 = 0.5)$ $(x_1 =) 0.5208273057...$ $(x_2 =) 0.5225973903...$ $(x_3 =) 0.5227511445....$ $(x_4 =) 0.5227645245...$	**M1**	**1.1**	Uses their iterative formula with correct starting value to produce terms up to at least x_2 to at least 4 significant figures	Allow degrees for **M1** only: For reference: $x_1 = 0.5003636...$ $x_2 = 0.5003641...$ $x_3 = 0.5003641...$
			0.5228	**A1** **[2]**	**1.1**	Must be stated to exactly **4** significant figures	