7			$\frac{32}{3}$		**B1**	**1.1**	Seen or implied by later working	

Question	Answer	Marks	AO	Guidance	
		M1*	**3.1a**	Attempt integration on a 3 term quadratic in x	(increase in power by 1 for at least 1 term but not just multiplying each term by x)
	$\int(-x^2+6x-5)\,\mathrm{d}x=-\frac{x^3}{3}+3x^2-5x$	**A1**	**1.1**	Ignore lack of $+c$	
	$-\frac{a^3}{3}+3a^2-5a-\left(-\frac{5^3}{3}+75-25\right)$	**Dep*M1**	**1.1**	$\pm\left(\mathrm{F}(a)-\mathrm{F}(5)\right)$	
	$\frac{32}{3}+\frac{a^3}{3}-3a^2+5a+\frac{25}{3}=19$	**A1**	**1.1**	oe	
	$a^3-9a^2+15a=0 \Rightarrow a^2-9a+15=0 \because a\neq 0$	**M1**	**3.1a**	solve their cubic (which comes from attempt at both areas and 19) leading to an exact value for a	**Dependent on both previous M marks**
	$a\neq\frac{9-\sqrt{21}}{2}\because a>5$	**B1**	**3.2a**	**BC –** must give a reason for rejection of this value of a	Allow rejection of 2.21
	$a=\frac{9+\sqrt{21}}{2}$ only	**A1**	**2.2a**	**BC**	
		[8]			