Question	Answer	Marks	Partial Marks
9(c)	$x^3 - x^2 - 4 = 0$	**M1**	condone one sign or arithmetic error
	Shows $x - 2$ is a factor or shows that $x = 2$ is a solution	**M1**	
	Uses $x - 2$ is a factor to find $x^2 + x + 2$	**B2**	**B1** for a quadratic factor with 2 terms correct
	Indicates that $x^2 + x + 2$ has no real roots and states $x = 2$ as the only solution	**A1**	dep on all previous marks awarded
10(a)	$\frac{dy}{dx} = -5x^{-2} + 2x - 1$ oe	**M2**	**M1** for any two correct terms
	[When $x = 1$] $\frac{dy}{dx} = -4$ and $y = 5$	**A1**	
	$y - 5 = -4(x - 1)$ oe	**M1**	**FT** *their* $\left.\frac{dy}{dx}\right\|_{x=1}$ and y; dep on at least **M1**
	$y = -4x + 9$	**A1**	**FT**
10(b)	$F(x) = 5\ln x + \frac{x^3}{3} - \frac{x^2}{2}$ $(+c)$	**B2**	**B1** for $5\ln x$ and one other term correct
	$F(3) - F(1)$	**M1**	dep on at least **B1** for integration
	$5\ln 3 + \frac{14}{3}$	**A1**	

Question	Answer	Marks	Partial Marks
11(a)	$l=\frac{4}{r}$	**B1**	
	$h^2 = l^2 - r^2$ or $l^2 = r^2 + h^2$	**M1**	
	$h^2=\left(\frac{4}{r}\right)^2 - r^2$ or $\left(\frac{4}{r}\right)^2 = r^2 + h^2$ or $l^2 = \frac{16}{r^2}$ **and** $h^2 = l^2 - r^2$	**M1**	**FT** *their l* ; dep on previous **M1**
	Correct, convincing completion to $h^2 = \frac{16}{r^2} - r^2$	**A1**	
	Alternative method		
	$l=\sqrt{r^2+h^2}$	**(B1)**	
	$\pi r\sqrt{r^2+h^2} = 4\pi$	**(M1)**	
	$\left(\sqrt{r^2+h^2}\right)^2=\left(\frac{4}{r}\right)^2$	**(M1)**	
	Correct, convincing completion to $h^2 = \frac{16}{r^2} - r^2$	**(A1)**	
11(b)	$\frac{\pi}{3} r^2 \sqrt{\frac{16}{r^2} - r^2}$	**M1**	
	$\frac{\pi}{3}\sqrt{r^4\left(\frac{16}{r^2} - r^2\right)}$ and correct completion to $\frac{\pi}{3}\sqrt{16r^2 - r^6}$	**A1**	