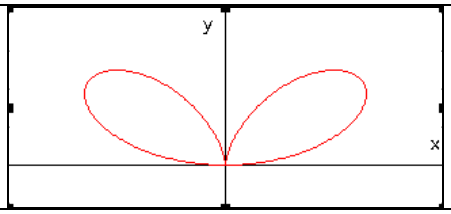
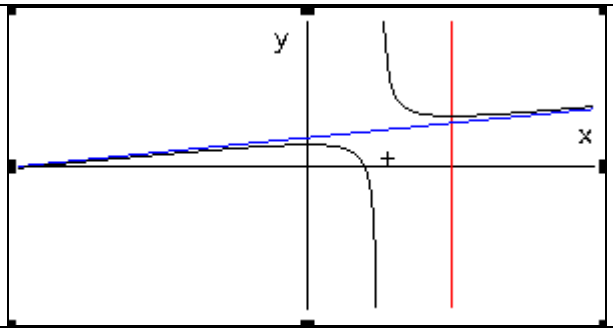
Jan/Mac 2005 Intake Paper 1 (FM1) [Examination date: 6 April 2006]

1.	SHOW
2.	i) $\frac{16}{\sqrt{310}}$; (ii) $\mathbf{r} = \begin{pmatrix} 0 \\ 5 \\ 2 \end{pmatrix} + \pi \begin{pmatrix} 1 \\ -2 \\ 1 \end{pmatrix}$
3.	$\frac{2}{3}, \frac{-1}{3}, -3$
4.	ii) $\frac{256}{693}$
5.	$A\cos 3x^2 + B\sin 3x^2 - \frac{2}{3}$
6.	i) 3
7.	i) $16\sqrt{3}$; (ii) 192π ; (iii) $-7\frac{1}{3}$
8.	ii) $\left\{ \begin{pmatrix} 1 \\ 1 \\ 1 \\ -1 \end{pmatrix} \right\}$
9.	
10.	$\tan 3\theta = \frac{3\tan\theta - \tan^3\theta}{1 - 3\tan^2\theta}$; $2-\sqrt{3}$; $2+\sqrt{3}$
11E.	b = –2 ; (i) (2, 7) , (0, 3) 
11O.	ii) $\left\{ \begin{pmatrix} 1 \\ 2 \\ 3 \\ 7 \end{pmatrix}, \begin{pmatrix} 2 \\ 5 \\ 7 \\ 16 \end{pmatrix} \right\}$; $\begin{pmatrix} -4 \\ 3 \\ 0 \\ 0 \end{pmatrix}$; (iii) $\begin{pmatrix} 17 \\ -7 \\ 1 \\ 0 \end{pmatrix}$