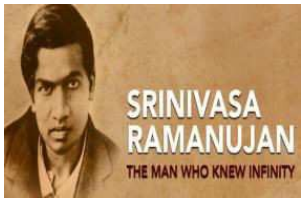
	SRM Institute of Science and Technology Kattankulathur	
	DEPARTMENT OF MATHEMATICS	
	18MAB101T Calculus and Linear Algebra	
	UNIT - IV	
	Tutorial Sheet -3	Answers

1.	Show that $\Gamma\left(\frac{1}{2}\right)=\sqrt{\pi}$	
2.	Evaluate $\int_0^1 x^6(1-x)^9\,dx$	$\frac{6!\ 9!}{16!}$
3.	Evaluate $\int_0^{\pi/2} \sin^6\theta\cos^{10}\theta\,d\theta$	$\frac{1}{512}\frac{225*63}{8!}\pi$
4	Evaluate $\int_0^{\pi/2} \sqrt{\cot\theta}\,d\theta$	$\frac{\pi}{\sqrt{2}}$
5.	Evaluate $\int_0^{\infty} e^{-x}\sqrt{x}\,dx$	$\frac{\sqrt{\pi}}{2}$
6.	Evaluate $\int_0^{\infty} e^{-4x}x^{16}\,dx$	$\frac{16!}{4^{17}}$
7.	Evaluate $\int_0^1 \frac{dx}{\sqrt{1-x^4}}$	$\frac{\sqrt{\pi}}{2}\frac{\Gamma\left(\frac{1}{4}\right)}{\Gamma\left(\frac{3}{4}\right)}$
8.	Evaluate $\int_0^{\infty} e^{-x^4}x^4\,dx$	$\frac{1}{4}\Gamma\left(\frac{5}{4}\right)$