HINDU COLLEGE :: GUNTUR

Name of the Lecturer : Dr. S.V.S. GIRIJA , Lecturer in Mathematics

Assignments 2017-18

S. No.	Student Name	Group	Roll No.	Hallticket No.	Topic of Assignment
1	ANUMULA AYYAPPAREDDY	MPC	9	Y163028112	1. If $f:\mathbb{R}\to\mathbb{R}$ is a function defined as $f(x)=\frac{\lvert x-2\rvert}{x-2}$ when $x\neq 2$, then prove that $\lim_{x\to 2} f(x)$ does not exist. 2. Let $S=\mathbb{R}-\{0\}$ and $f:S\to\mathbb{R}$ be such that $f(x)=\frac{e^{1/x}}{1+e^{1/x}}$. Find whether $\lim_{x\to 0} f(x)$ exists or not. 3. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$.
2	ARDHALA ANILKUMAR	MPC	2	Y163028113	1. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 2. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\, c\in(a,b) \ni f(c)=0$.
3	BADE ANKAMMARAO	MPC	18	Y163028114	1. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 2. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\, c\in(a,b) \ni f(c)=0$.

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4	BANALA RAVALI	MPC	4	Y163028116	1. Examine for continuity of the function f defined by $f(x)=\lvert x\rvert+\lvert x-1\rvert$ at $x=0,\ x=1$. 2. Show that the function f defined by $f(x)=x^2\sin\frac{1}{x}$ when $x\neq 0$ and $f(0)=0$ is continuous at $x = 0$. 3. If $f:\mathbb{R}\to\mathbb{R}$ be defined by $f(x)=\frac{e^{1/x}-e^{-1/x}}{e^{1/x}+e^{-1/x}}$ if $x\neq 0$ and $f(0)=1$. Show that f has discontinuity of first kind at $x = 0$.
5	BATHULA RAMESHBABU	MPC	15	Y163028117	1. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} 2x+1 & if\ \ x\le 1 \\ ax^2+b & if\ \ 1<x<3 \\ 5x+2a & if\ \ x\ge 3 \end{cases}$ is continuous everywhere. 2. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} \frac{\sin(a+1)x+\sin x}{x} & if\ \ x<0 \\ c & if\ \ x=0 \\ \frac{(x+bx^2)^{1/2}-x^{1/2}}{bx^{3/2}} & if\ \ x>0 \end{cases}$ is continuous at $x = 0$.

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6	BATTU DEVENDRAKUMAR	MPC	23	Y163028118	1. Prove that every differentiable function is continuous. Is converse true? Justify your answer. 2. Show that $f(x)=\lvert x-1\rvert+\lvert x-2\rvert$ is continuous but not derivable at x =1, 2.
7	BILLA MOUNI	MPC	36	Y163028119	1. State and prove Rolle's theorem. 2. Verify Rolle's theorem in $[a,b]$ for the function $f(x)=(x-a)^m(x-b)^n$; m,n being positive integers.
8	BONTHU VEERAREDDY	MPC	16	Y163028120	1. State and prove Lagrange's mean value theorem. Find 'c' of Lagrange's theorem for $f(x)=x(x-1)(x-2)$ on [0, 1/2].
9	BULLA SATISH	MPC	38	Y163028121	1. State and prove Cauchy's mean value theorem. 2. Verify Cauchy's mean value theorem for $f(x)=x^2,\ g(x)=x^3$ in [1,2].
10	CHANDU PAVANKUMAR	MPC	17	Y163028122	1. Find lower and upper Riemann sums of $f(x)=2x-1$ on $[0,1]$, when $P=\left\{0,\frac{1}{3},\frac{2}{3},1\right\}$. 2. If $f(x)=x^2$ on $[0,1]$, when $P=\left\{0,\frac{1}{3},\frac{2}{3},1\right\}$, compute $L(P,f)$ and $U(P,f)$.

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11	CHEEDA VENKATA PRATHAP	MPC	12	Y163028123	1. Prove that a bounded function $f:[a,b]\to R$ is Riemann integrable on [*a*, *b*] such that $U(P,f)-L(P,f)<\varepsilon.$ 2. Prove that $f(x)=x^2$ is integrable on $[0,a]$ and $\int_0^a x^2\ dx=\frac{a^3}{3}.$
12	CHERUKURI SAIKRISHNA	MPC	37	Y163028124	1. If $f:[a,b]\to R$ is monotonic on [*a*, *b*], then show that *f* is integrable on [*a*, *b*]. 2. State and prove Fundamental theorem of integral calculus.
13	CHIMAKURTHI PRADEEPKUMAR	MPC	11	Y163028125	1. Apply Fundamental theorem of integral calculus, evaluate $\int_a^b \sin x\ dx.$ 2. Evaluate $\int_0^{\pi/4}\left(\sec^4 x-\tan^4 x\right)dx.$
14	CHINNAPUREDDYVENKATANARENDRAREDDY	MPC	3	Y163028126	1. Show that $\lim_{n\to\infty}\sum_{r=1}^{n}\frac{1}{\sqrt{n^2-r^2}}=\frac{\pi}{2}.$ 2. Show that $\lim_{n\to\infty}\sum_{r=1}^{n}\left[\frac{1}{n}+\frac{1}{n+1}+\frac{1}{n+2}+\ldots+\frac{1}{3n}\right]=\log 3.$

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15	DEVARAKONDA ELISHARANI	MPC	28	Y163028127	1. Define convergence of a sequence. Show that every convergent sequence is bounded. Give an example to show the converse is not true. 2. State and prove Cauchy's first theorem on limits.
16	DUDIKI SANDHYA MADHAVI	MPC	24	Y163028128	1. State and prove Cauchy's second theorem on limits. Show that monotone sequence is convergent iff it is bounded
17	DUPPALA VENKATARAJESH	MPC	41	Y163028129	1. Show that a sequence is convergent iff it is bounded and has only one limit point. 2. Define a Cauchy sequence. State and prove Cauchy's general principle of convergence.
18	GORIKAPUDI SANDEEP	MPC		Y163028130	1. Prove that $\frac{1}{\pi} \le \int_0^1 \frac{\sin \pi x}{1+x^2}\, dx \le \frac{2}{\pi}$. 2. Prove that $\frac{\pi^3}{24} \le \int_0^{\pi} \frac{x^2}{5+3\cos x}\, dx \le \frac{\pi^3}{6}$.
19	JETTI VENKATESH	MPC		Y163028131	4. If $f:\mathbb{R}\to\mathbb{R}$ is a function defined as $f(x)=\frac{\lvert x-2\rvert}{x-2}$ when $x \ne 2$, then prove that $\lim_{x\to 2} f(x)$ does not exist. 5. Let $S=\mathbb{R}-\{0\}$ and $f:S\to\mathbb{R}$ be such that $f(x)=\frac{e^{1/x}}{1+e^{1/x}}$. Find whether $\lim_{x\to 0} f(x)$ exists or not. 6. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$.

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20	KANDA VEERANJANEYULU	MPC		Y163028132	3. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 4. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\, c\in(a,b) \ni f(c)=0.$
21	KUKKAMALLA PRADEEPCHAND	MPC	1	Y163028133	3. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 4. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\, c\in(a,b) \ni f(c)=0.$
22	MAGULURI SATYANARAYANA	MPC	46	Y163028134	4. Examine for continuity of the function f defined by $f(x)=\|x\|+\|x-1\|$ at $x=0,\ x=1.$ 5. Show that the function f defined by $f(x)=x^2\sin\frac{1}{x}$ when $x\neq 0$ and $f(0)=0$ is continuous at $x = 0$. 6. If $f:\mathbb{R}\to\mathbb{R}$ be defined by $f(x)=\dfrac{e^{1/x}-e^{-1/x}}{e^{1/x}+e^{-1/x}}$ if $x\neq 0$ and $f(0)=1.$ Show that f has discontinuity of first kind at $x = 0$.

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23	MANIMALA THIRUPATHI RAO	MPC	27	Y163028135	3. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} 2x+1 & if\ \ x\le 1 \\ ax^2+b & if\ \ 1<x<3 \\ 5x+2a & if\ \ x\ge 3 \end{cases}$ is continuous everywhere. 4. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} \dfrac{\sin(a+1)x+\sin x}{x} & if\ \ x<0 \\ c & if\ \ x=0 \\ \dfrac{(x+bx^2)^{1/2}-x^{1/2}}{bx^{3/2}} & if\ \ x>0 \end{cases}$ is continuous at x = 0 .
24	MATTUKOYYA BALA RAJU	MPC	22	Y163028136	3. Prove that every differentiable function is continuous. Is converse true? Justify your answer. 4. Show that $f(x)=\lvert x-1\rvert+\lvert x-2\rvert$ is continuous but not derivable at x =1, 2.
25	MOGUL HUSSAIN	MPC	33	Y163028137	3. State and prove Rolle's theorem. 4. Verify Rolle's theorem in $[a,b]$ for the function $f(x)=(x-a)^m(x-b)^n$; m,n being positive integers.

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Name of the Lecturer : Y. SREEKANTH , Lecturer in Mathematics

Assignments 2017-18

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27	MUNNANGI TEJESWARA REDDY	MPC	25	Y163028139	7. If $f:\mathbb{R}\to\mathbb{R}$ is a function defined as $f(x)=\frac{\lvert x-2\rvert}{x-2}$ when $x\neq 2$, then prove that $\lim_{x\to 2} f(x)$ does not exist. 8. Let $S=\mathbb{R}-\{0\}$ and $f:S\to\mathbb{R}$ be such that $f(x)=\frac{e^{1/x}}{1+e^{1/x}}$. Find whether $\lim_{x\to 0} f(x)$ exists or not. 9. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$.
28	NADIMPALLI SARATHKUMAR	MPC	8	Y163028140	5. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 6. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\, c\in(a,b) \ni f(c)=0$.
29	NAMBULA GOPALAKRISHNA	MPC	20	Y163028141	5. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 6. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\, c\in(a,b) \ni f(c)=0$.

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30	PATRA KOTESWARARAO	MPC	40	Y163028142	7. Examine for continuity of the function f defined by $f(x)=\lvert x\rvert+\lvert x-1\rvert$ at $x=0,\ x=1.$ 8. Show that the function f defined by $f(x)=x^2\sin\frac{1}{x}$ when $x\neq 0$ and $f(0)=0$ is continuous at x = 0. 9. If $f:\mathbb{R}\to\mathbb{R}$ be defined by $f(x)=\frac{e^{1/x}-e^{-1/x}}{e^{1/x}+e^{-1/x}}$ if $x\neq 0$ and $f(0)=1.$ Show that f has discontinuity of first kind at x = 0.
31	PATRA YESUBABU	MPC	34	Y163028143	5. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} 2x+1 & if\ \ x\le 1 \\ ax^2+b & if\ \ 1<x<3 \\ 5x+2a & if\ \ x\ge 3 \end{cases}$ is continuous everywhere. 6. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} \frac{\sin(a+1)x+\sin x}{x} & if\ \ x<0 \\ c & if\ \ x=0 \\ \frac{(x+bx^2)^{1/2}-x^{1/2}}{bx^{3/2}} & if\ \ x>0 \end{cases}$ is continuous at x = 0 .

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32	POTLURI GOPI	MPC	7	Y163028144	5. Prove that every differentiable function is continuous. Is converse true? Justify your answer. 6. Show that $f(x)=\lvert x-1\rvert+\lvert x-2\rvert$ is continuous but not derivable at $x=1, 2$.
33	RAYAPUDI AJAY KIRAN KUMAR	MPC		Y163028145	5. State and prove Rolle's theorem. 6. Verify Rolle's theorem in $[a,b]$ for the function $f(x)=(x-a)^m(x-b)^n$; m,n being positive integers.
34	SHAIK ARIFULLAKHADIRMOHIDDINSAHEB	MPC	26	Y163028146	10. If $f:\mathbb{R}\to\mathbb{R}$ is a function defined as $f(x)=\frac{\lvert x-2\rvert}{x-2}$ when $x\neq 2$, then prove that $\lim_{x\to 2} f(x)$ does not exist. 11. Let $S=\mathbb{R}-\{0\}$ and $f:S\to\mathbb{R}$ be such that $f(x)=\frac{e^{1/x}}{1+e^{1/x}}$. Find whether $\lim_{x\to 0} f(x)$ exists or not. 12. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$.
35	SHAIK JALEEL BASHA	MPC	6	Y163028147	7. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 8. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\, c\in(a,b) \ni f(c)=0$.

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36	SHAIK SARDAM HUSSAIN	MPC	14	Y163028148	7. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 8. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\ c\in(a,b) \ni f(c)=0$.
37	SHAIK SULEMAN	MPC		Y163028149	10. Examine for continuity of the function f defined by $f(x)=\lvert x\rvert+\lvert x-1\rvert$ at $x=0,\ x=1$. 11. Show that the function f defined by $f(x)=x^2\sin\dfrac{1}{x}$ when $x\neq 0$ and $f(0)=0$ is continuous at $x = 0$. 12. If $f:\mathbb{R}\to\mathbb{R}$ be defined by $f(x)=\dfrac{e^{1/x}-e^{-1/x}}{e^{1/x}+e^{-1/x}}$ if $x\neq 0$ and $f(0)=1$. Show that f has discontinuity of first kind at $x = 0$.
38	SHAIK VALI	MPC		Y163028150	7. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} 2x+1 & if\ \ x\leq 1 \\ ax^2+b & if\ \ 1<x<3 \\ 5x+2a & if\ \ x\geq 3 \end{cases}$ is continuous everywhere.

					8. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases}\dfrac{\sin(a+1)x+\sin x}{x} & if\ \ x<0\\ c & if\ \ x=0\\ \dfrac{(x+bx^2)^{1/2}-x^{1/2}}{bx^{3/2}} & if\ \ x>0\end{cases}$ is continuous at $x = 0$.
39	THOTTEMPUDI PRABHUDAS	MPC		Y163028151	7. Prove that every differentiable function is continuous. Is converse true? Justify your answer. 8. Show that $f(x)=\lvert x-1\rvert+\lvert x-2\rvert$ is continuous but not derivable at x =1, 2.
40	VALAPARLA SURESHBABU	MPC	39	Y163028152	7. State and prove Rolle's theorem. 8. Verify Rolle's theorem in $[a,b]$ for the function $f(x)=(x-a)^m(x-b)^n$; m,n being positive integers.
S. No.	**Student Name**	**Group**	**Roll No.**	**Hallticket No.**	**Topic of Assignment**
	ARUDRA MAHESH BABU	MPCs		Y163028162	13. If $f:\mathbb{R}\to\mathbb{R}$ is a function defined as $f(x)=\dfrac{\lvert x-2\rvert}{x-2}$ when $x\neq 2,$ then prove that $\lim_{x\to 2} f(x)$ does not exist. 14. Let $S=\mathbb{R}-\{0\}$ and $f:S\to\mathbb{R}$ be such that $f(x)=\dfrac{e^{1/x}}{1+e^{1/x}}$. Find whether $\lim_{x\to 0} f(x)$ exists or not.

				15. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$.
BANDUCHODE VENKAT SAI	MPCs		Y163028163	9. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 10. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\ c\in(a,b) \ni f(c)=0$.
BATHULAVAIKUNTATHRIVENDRABABU	MPCs	220	Y163028164	9. If f is continuous on $[a, b]$ then show that f is bounded on $[a, b]$. 10. Let $f:[a,b]\to\mathbb{R}$. If f is continuous on $[a, b]$ and $f(a)$, $f(b)$ have opposite sign then $\exists\ c\in(a,b) \ni f(c)=0$.
CHOUKALA ADILAKSHMI	MPCs	201	Y163028165	13. Examine for continuity of the function f defined by $f(x)=\|x\|+\|x-1\|$ at $x=0,\ x=1$. 14. Show that the function f defined by $f(x)=x^2\sin\frac{1}{x}$ when $x\neq 0$ and $f(0)=0$ is continuous at $x = 0$. 15. If $f:\mathbb{R}\to\mathbb{R}$ be defined by $f(x)=\frac{e^{1/x}-e^{-1/x}}{e^{1/x}+e^{-1/x}}$ if $x\neq 0$ and $f(0)=1$. Show that f has discontinuity of first kind at $x = 0$.

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	DEEKONDA THRIVENU	MPCs	239	Y163028166	9. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} 2x+1 & if\ \ x\le 1 \\ ax^2+b & if\ \ 1<x<3 \\ 5x+2a & if\ \ x\ge 3 \end{cases}$ is continuous everywhere. 10. Determine the constants a , b so that the function f defined by $f(x)=\begin{cases} \frac{\sin(a+1)x+\sin x}{x} & if\ \ x<0 \\ c & if\ \ x=0 \\ \frac{(x+bx^2)^{1/2}-x^{1/2}}{bx^{3/2}} & if\ \ x>0 \end{cases}$ is continuous at $x = 0$.
	DUDEKULA ANWAR JANI	MPCs	209	Y163028167	9. Prove that every differentiable function is continuous. Is converse true? Justify your answer. 10. Show that $f(x)=\lvert x-1\rvert+\lvert x-2\rvert$ is continuous but not derivable at x =1, 2.
	GALI TEJA	MPCs	214	Y163028168	9. State and prove Rolle's theorem. 10. Verify Rolle's theorem in $[a,b]$ for the function $f(x)=(x-a)^m(x-b)^n$; m,n being positive integers.

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	GANDIKOTA BALA GAYATRI	MPCs	210	Y163028169	16. Examine for continuity of the function f defined by $f(x)=\|x\|+\|x-1\|$ at $x=0,\ x=1$. 17. Show that the function f defined by $f(x)=x^2\sin\frac{1}{x}$ when $x\neq 0$ and $f(0)=0$ is continuous at $x = 0$.
	GANGASANI KRISHNA REDDY	MPCs		Y163028170	11. State and prove Rolle's theorem. 12. Verify Rolle's theorem in $[a,b]$ for the function $f(x)=(x-a)^m(x-b)^n$; m,n being positive integers.
	GUDIMETLA NEEHRUDAS	MPCs	218	Y163028171	11. Prove that every differentiable function is continuous. Is converse true? Justify your answer. 12. Show that $f(x)=\|x-1\|+\|x-2\|$ is continuous but not derivable at x =1, 2.