1.	If $\emptyset$ be the angle between the tangent and radius vector at any point on the curve, $r = f(\theta)$					
	then cot Ø is	•				
	A)	$r\frac{dr}{dr}$	B)	$\frac{1}{2} \frac{dr}{dr}$		
		$r \frac{d\theta}{d\theta}$ $r \frac{d\theta}{dr}$		$\frac{r}{r}\frac{d\theta}{d\theta}$ $\frac{1}{r}\frac{d\theta}{dr}$		
	(C)	$r\frac{d\theta}{}$	D)	$\frac{1}{2}\frac{d\theta}{d\theta}$		
		dr		r dr		
2.	The radius of	of curvature of the curve $y =$	$e^x$ at the point (0	, 1) is:		
	A)	$\frac{2\sqrt{2}}{2}$	B)	$\frac{\sqrt{2}}{\sqrt{2}}$		
	(C)	2	D)	$\frac{\sqrt{2}}{2}$		
3.	The derivati	ive of arc $\frac{ds}{dx}$ for the curve $x = \frac{ds}{dx}$	= f(y) is:			
	A)	<u>ay</u>	B)	(den <sup>2</sup>		
	A)	$ \frac{\sqrt{1 + \left(\frac{dy}{dx}\right)^2}}{1 + \left(\frac{dx}{dy}\right)^2} $	В)	$1 + \left(\frac{dy}{dx}\right)^2$		
	(C)	$1 + \left(\frac{dx}{dy}\right)^2$	D)	$\sqrt{1+\left(\frac{dx}{dy}\right)^2}$		
4.	Curvature o	f a straight line is:		•		
	A)	∞	B)	0		
	C)	1	D)	2		
5.	For a given polar curve $r = a \sin\theta$ let $\varphi$ be the angle between radius vector and tangent					
	to the curve	, then $\varphi =$				
	A)	$\frac{\theta}{}$	B)	$oldsymbol{ heta}$		
	(2)	2	D)	$\pi$		
	(C)	U	D)	$\frac{1}{2}$		
6.	For the curve $\frac{r}{a} = e^{\theta}$ , derivative of arc $\frac{ds}{d\theta} =$					
	A)	$\frac{a}{2r}$	B)	$\sqrt{2}$ r		
	(C)	$r^2$	D)	r		
		1		$\frac{\overline{2}}{2}$		
7.	The curvatu	re of the curve $f(x) = x^3 - $	x + 1 at $x = 1$ is			
	A)	<u>6</u>	B)	3		
		<u> </u>		5		
	C)	<u>6</u>	D)	3		
		$5^{3/2}$		${5^{3/_{2}}}$		
8.	The function	$f(x) = x^2 \text{ satisfy Rolle's t}$	heorem in which o	f the following interval?		
	A)	[1, 2]	B)	[0, 1]		
	<u>C)</u>	[-1, 1]	D)	[-1, 0]		
9.		and $\phi$ denote the angle between		r and tangent, then $\tan \phi =$		
	A)	$\frac{1}{\theta}$	B)	heta		
	C)	r	D)	<u>a</u>		
4.0		2.1	2 -	θ		
10.		of curvature of the curve $x = \frac{1}{2}$		the point $t = 0$ is		
	A)	<u> </u>	B)	a		
	(C)	2	D)	$\frac{a}{2}$		
				2		

11.	The function $f(x) = x^2$ satisfy the Rolle's theorem in which of the following into			in which of the following intervals:		
	A)	[1, 2]	B)	[0,1]		
	<b>C</b> )	[-1, 1]	D)	[-2,1]		
12.	The de	erivative of arc, $\frac{ds}{d\theta}$ , for the curve $r = f(\theta)$	9) is:			
	A)	10. 2	B)	1,2		
		$\sqrt{r^2 + \left(\frac{d\theta}{dr}\right)^2}$		$r^2 + \left(\frac{ar}{a}\right)$		
				$\sqrt{r^2 + \left(\frac{dr}{d\theta}\right)^2}$		
	(C)	$(d\theta)^2$	D)	$\left  -\frac{dr}{\sqrt{2}} \right $		
		$\sqrt{1+r^2\left(\frac{d\theta}{dr}\right)^2}$		$\sqrt{1+r^2\left(\frac{dr}{d\theta}\right)^2}$		
13.		<u> </u>	dS	Y		
	The de	erivative of arc S for the curve $y = g(x)$	is $\frac{ds}{dy}$	=		
			ау			
	A)	$\sqrt{1 + \left(\frac{dy}{dx}\right)^2}$ $\sqrt{1 + \frac{dx}{dy}}$	B)	$\int d^2y$		
		$\sqrt{1+\left(\frac{ay}{l}\right)}$		$\sqrt{1 + \frac{d^2 y}{dx^2}}$		
	G)	$\sqrt{(dx)}$				
	(C)	$1+\frac{dx}{}$	D)	$1 + \left(\frac{dy}{dx}\right)^2$		
		$\sqrt{1+dy}$		$1 + \left(\frac{dy}{dx}\right)$		
14.	Curvat	ture of a straight line is :		, const		
1	A)	©	B)	0		
	C)	1	D)	none of these		
15.	The ra	The radius of curvature of the curve $y = x^3$ when $x = 1$ is:				
	A)	3	B)	3		
		$\frac{(10)^{\frac{1}{2}}}{\frac{6}{2}}$		$\frac{(5)^{\frac{3}{2}}}{6}$		
	C)	2	D)	1		
				$\overline{2}$		
16.		dius of curvature for the curve $y = f(x)$	is $\rho =$	2		
	(A)	$(1+y_2^2)^{\frac{3}{2}}$	B)	$(1+y_1^2)^{\frac{3}{2}}$		
		$\frac{\sqrt{2}}{v_1}$		$\frac{\overline{v_1v_2}}{v_2}$		
	C)	$(1 + a, 2)^{\frac{2}{3}}$	D)	$(1 - 2)^{\frac{3}{2}}$		
		$\frac{(1+y_1^2)^{\frac{2}{3}}}{y_1^2}$		$(1-y_1^2)^{\frac{3}{2}}$		
17.	10	<u> </u>	1	<i>y</i> <sub>2</sub>		
1/.	If $u = y^x$ then $\frac{\partial u}{\partial y} =$					
	A)	$y^x$	B)	$\begin{array}{c} y^x logy \\ xy^{x-1} \end{array}$		
	C)	$y^x log x$	D)	$xy^{x-1}$		
18.		$f_x(y,z) = e^{xyz}$ then $f_x(2,2,2) =$	D)	2.9		
	A)	4e <sup>8</sup>	B)	2e <sup>8</sup>		
19.	(C)	$8e^2$	D)	4		
17.	Given	$u = x + y$ , $v = xy$ then $\frac{\partial(u,v)}{\partial(x,y)=}$	_			
	A)	x + y	B)	0		
	C)	x - y	D)	1		
20.	If $f(x)$	(y) = x + y, where $x = sint$ , $y = cost$	then '	$\frac{df}{dt}$ at $t = \frac{\pi}{2}$ is		
	A)	-1	B)	-2		
	C)	2	D)	0		

$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	21.	Slope of the curve $y^2 + 2x^2 = 6$ a	t (1, 1) is:			
22. If $f(x)$ is a differentiable function and $f(1) = f(4)$ then  A) $f'(c) = 0$ for some $c \in (1, 4)$ B) $f'(c) = 0$ for some $c \in (2, 4)$ C) $f'(c) = 0$ for some $c \in (3, 4)$ D) $f'(c) = 0$ for some $c \in (2, 4)$ 23. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1)$ A) 0 B) 1  C) -1 D) 3  24. If $u = x - y$ and $v = x + y$ , then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) 2 B) 3  C) -2 D) 4  25. Given $u = x + y$ , $v = xy$ then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) $x + y$ B) 0  C) $x - y$ D) 1  26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:  A) $6y^2 + 16x$ B) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 1 If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = x^2$ A) $3xy^2$ B) $3x^2y^3$ C) $6y^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at $(3,2)$ A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 11 If $f(x) = x^2 + y^2 + y^2$				4		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		C) 3	D)	-2		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	22.	) then				
23. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) 0 B) 1 C) -1 D) 3  24. If $u = x - y$ and $v = x + y$ , then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) 2 B) 3 C) -2 D) 4  25. Given $u = x + y$ , $v = xy$ then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) $x + y$ B) 0 C) $x - y$ D) 1  26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:  A) $6y^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = \frac{A}{A}$ $3xy^2$ B) $3x^2y^3$ C) $6y^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at $(3,2)$ A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ fy $f_y = -16$ If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ and $f_y$ at $(3,2)$ 30. If $f_x = 3x^2y + 5y$ then $\frac{\partial z}{\partial x \partial y}$ is:  A) $f_x = 5x + f_y = 0$ D) $f_x = -5x + f_y = -16$ If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) $f_x = 5x + f_y = 0$ D) $f_x = -5x + f_y = -16$ If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) $f_x = 5x + f_y = 0$ D) $f_x = -5x + f_y = -16$ If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) $f_x = 5x + f_y = 0$ D) $f_x = -5x + f_y = -16$ D) $f_x = -5x + f_y = -5x + f_$		A) $f'(c) = 0$ for some $c \in$	E (1,4) B)	$f'(c) = 0$ for some $c \in (1,2)$		
$ \begin{array}{ c c c c c c }\hline A & 0 & B & 1 \\\hline C & -1 & D & 3 \\\hline \hline $			· /	, , , ,		
24. If $u = x - y$ and $v = x + y$ , then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) 2 B) 3 C) -2 D) 4  25. Given $u = x + y$ , $v = xy$ then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) $x + y$ B) 0 C) $x - y$ D) 1  26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:  A) $6y^2 + 16x$ B) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = x^2$ A) $3xy^2$ B) $3x^2y^3$ C) $6y^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at $(3,2)$ A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) $3$ B) 2 C) 0 D) 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x\partial y}$ is:  A) $(x + y) = (x + y)^2$ B) $(x + y) = (x + y)^2$ A) $(x + y) = (x + y)^2$ A) $(x + y) = (x + y)^2$ B) $(x + y) = (x + y)^2$ B) $(x + y) = (x + y)^2$ C) $(x + y) = (x + y)^2$ B) $(x + y) = (x + y)^2$ B	23.			at (1,1,1)		
24. If $u = x - y$ and $v = x + y$ , then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) 2 B) 3 C) -2 D) 4  25. Given $u = x + y$ , $v = xy$ then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) $x + y$ B) 0 C) $x - y$ D) 1  26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:  A) $6y^2 + 16x$ D) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} =$ A) $3xy^2$ B) $3x^2y^3$ C) $6y^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at (3,2) A) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) 3 B) 2 C) 0 D D 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x\partial y}$ is:  A) $\frac{\partial x}{\partial x}$ B) $\frac{\partial x}{\partial x}$ C) $\frac{\partial x}{\partial x}$ B $\frac{\partial x}{\partial x}$ B $\frac{\partial x}{\partial x}$				1		
A) 2 B) 3  C) -2 D) 4  25. Given $u = x + y$ , $v = xy$ then the Jacobian $\frac{\partial(ux)}{\partial(x,y)}$ is:  A) $x + y$ B) 0  C) $x - y$ D) 1  26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:  A) $6y^2 + 16x$ B) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = 6xy^3$ then $f_{xyx} = 6xy^3$ D) $18xy^2$ 28. If $f(x, y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at (3,2)  A) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x, y, z) = x^2 + xyz + z$ , then the value of $f_x$ at (1,1)  A) 3 B) 2  C) 0 D D 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) $6x$ B) $3xy$ C) $5x$ D) $5xy$ 31. If $u = y^x \tan \frac{\partial u}{\partial x}$ is  A) $y^x$ B) $y^x \log y$ C) $y^x \log x$ D) $xy^{x-1}$ 32. If $x = r\cos\theta$ , $y = r\sin\theta$ then the value of $\frac{\partial(x,y)}{\partial(x,\theta)}$ is  A) $r$ B) $r$ C) $r$ B) $r$ C) $r$ C $r$ C $r$ C $r$ B is said to be solenoidal if  A) $r$ B $r$ C D D D $r$ C $r$ F is said to be solenoidal if  A) $r$ F is said to be solenoidal if  A) $r$ F is said to be solenoidal if  A) $r$ F is said to be solenoidal if	24	/		I .		
25. Given $u = x + y$ , $v = xy$ then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is :  A) $x + y$ B) 0  C) $x - y$ D) 1  26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is :  A) $6y^2 + 16x$ B) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = 6xy^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at (3,2)  A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at (1,1,1)  A) $f_x = 5x$ $f_y = 5x$ $f_y$	24.	If $u = x - y$ and $v = x + y$ , the	en the Jacobian $\frac{\partial}{\partial t}$	(x,y)		
25. Given $u = x + y$ , $v = xy$ then the Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is:  A) $x + y$ B) 0  C) $x - y$ D) 1  26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:  A) $6y^2 + 16x$ B) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = $ A) $3xy^2$ B) $3x^2y^3$ C) $6y^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at (3,2)  A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at (1,1,1)  A) $3$ B) $2$ C) $0$ D) $1$ C)  30. If $f_x = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x\partial y}$ is:  A) $\frac{\partial z}{\partial x}$ B) $\frac{\partial z}{\partial x\partial y}$ Sy						
$ \begin{array}{ c c c c c }\hline A) & x+y & B) & 0 \\\hline C) & x-y & D) & 1 \\\hline 26. & If z=6x^2y^2+8x^2 then \frac{\partial z}{\partial x} is: \hline A) & 6y^2+16x & B) & 6x^2+8x^2\\\hline C) & 12xy^2+16x & D) & 6x^2+6y^2+8x^2\\\hline 27. & If f(x) is a function such that f_{xx}=6xy^3 then f_{xyx}=\\\hline A) & 3xy^2 & B) & 3x^2y^3\\\hline C) & 6y^3 & D) & 18xy^2\\\hline 28. & If f(x,y)=2x^3-4y^2, what is the value of f_x and f_y at (3,2) \hline A) & f_x=54, \ f_y=-16 & B) & f_x=16, \ f_y=-54\\\hline C) & f_x=54, \ f_y=0 & D) & f_x=-54 \ f_y=-16\\\hline 29. & If f(x,y,z)=x^2+xyz+z, \ \text{then the value of } f_x \ \text{at } (1,1,1)\\\hline A) & 3 & B) & 2\\\hline C) & 0 & D) & 1\\\hline 30. & If z=3x^2y+5y \ \text{then } \frac{\partial^2 z}{\partial x\partial y} \text{is :} \\\hline A) & \frac{6x}{\partial x} & B) & 3xy\\\hline C) & 5x & D) & 5xy\\\hline 31. & If u=y^x \ \text{then } \frac{\partial u}{\partial x} \text{is :} \\\hline A) & y^x & B) & y^x logy\\\hline C) & y^x logx & D) & xy^{x-1}\\\hline 32. & If x=r\cos\theta, y=r\sin\theta \ \text{then the value of } \frac{\partial (x,y)}{\partial (r,\theta)} \text{ is } \\\hline A) & r & B) & 1\\\hline C) & 0 & D) & 2\\\hline 33. & \vec{F} \ \text{is said to be solenoidal if} \\\hline A) & \nabla \times \vec{F} = \vec{0} & B) & \nabla \cdot \vec{F} = 0\\\hline C) & \nabla \cdot (\nabla \cdot \vec{F}) = 0 & D) & \nabla \times (\nabla \cdot \vec{F}) = 0\\\hline\hline \end{array}$	2.5		,			
$ \begin{array}{ c c c c c }\hline A) & x+y & B) & 0 \\\hline C) & x-y & D) & 1 \\\hline 26. & If z=6x^2y^2+8x^2 then \frac{\partial z}{\partial x} is: \hline A) & 6y^2+16x & B) & 6x^2+8x^2\\\hline C) & 12xy^2+16x & D) & 6x^2+6y^2+8x^2\\\hline 27. & If f(x) is a function such that f_{xx}=6xy^3 then f_{xyx}=\\\hline A) & 3xy^2 & B) & 3x^2y^3\\\hline C) & 6y^3 & D) & 18xy^2\\\hline 28. & If f(x,y)=2x^3-4y^2, what is the value of f_x and f_y at (3,2) \hline A) & f_x=54, \ f_y=-16 & B) & f_x=16, \ f_y=-54\\\hline C) & f_x=54, \ f_y=0 & D) & f_x=-54 \ f_y=-16\\\hline 29. & If f(x,y,z)=x^2+xyz+z, \ \text{then the value of } f_x \ \text{at } (1,1,1)\\\hline A) & 3 & B) & 2\\\hline C) & 0 & D) & 1\\\hline 30. & If z=3x^2y+5y \ \text{then } \frac{\partial^2 z}{\partial x\partial y} \text{is :} \\\hline A) & \frac{6x}{\partial x} & B) & 3xy\\\hline C) & 5x & D) & 5xy\\\hline 31. & If u=y^x \ \text{then } \frac{\partial u}{\partial x} \text{is :} \\\hline A) & y^x & B) & y^x logy\\\hline C) & y^x logx & D) & xy^{x-1}\\\hline 32. & If x=r\cos\theta, y=r\sin\theta \ \text{then the value of } \frac{\partial (x,y)}{\partial (r,\theta)} \text{ is } \\\hline A) & r & B) & 1\\\hline C) & 0 & D) & 2\\\hline 33. & \vec{F} \ \text{is said to be solenoidal if} \\\hline A) & \nabla \times \vec{F} = \vec{0} & B) & \nabla \cdot \vec{F} = 0\\\hline C) & \nabla \cdot (\nabla \cdot \vec{F}) = 0 & D) & \nabla \times (\nabla \cdot \vec{F}) = 0\\\hline\hline \end{array}$	25.	Given $u = x + y$ , $v = xy$ then the	Jacobian $\frac{\partial(u,v)}{\partial(x,y)}$ is	:		
26. If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:  A) $6y^2 + 16x$ B) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = 6y^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at $(3,2)$ A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 30. If $f_x = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) $f_x = 5x + 5y +$		A) $x + y$	B)	0		
A) $6y^2 + 16x$ B) $6x^2 + 8x^2$ C) $12xy^2 + 16x$ D) $6x^2 + 6y^2 + 8x^2$ 27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = \frac{A}{A}$ $3xy^2$ B) $3x^2y^3$ C) $6y^3$ D) $18xy^2$ 28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at $(3,2)$ A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) $f_x = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) $f_x = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) $f_x = 5x + 5$		C) $x-y$	D)	1		
27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = \frac{A}{A}$	26.	If $z = 6x^2y^2 + 8x^2$ then $\frac{\partial z}{\partial x}$ is:				
27. If $f(x)$ is a function such that $f_{xx} = 6xy^3$ then $f_{xyx} = \frac{A}{A}$		A) $6y^2 + 16x$	B)	$6x^2 + 8x^2$		
A)   3xy <sup>2</sup>   B)   3x <sup>2</sup> y <sup>3</sup>     C)   6y <sup>3</sup>   D)   18xy <sup>2</sup>     28.   If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at (3,2)     A)   $f_x = 54$ , $f_y = -16$   B)   $f_x = 16$ , $f_y = -54$     C)   $f_x = 54$ , $f_y = 0$   D)   $f_x = -54$ $f_y = -16$     29.   If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at (1,1,1)     A)   3   B)   2     C)   0   D   1     30.   If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:   A)   $\frac{\partial^2 z}{\partial x \partial y}$   B)   $\frac{\partial^2 z}{\partial x \partial y}$     31.   If $u = y^x$ then $\frac{\partial u}{\partial x}$ is     A)   $\frac{\partial^2 z}{\partial x \partial y}$   D)   $\frac{\partial^2 z}{\partial x \partial y}$		C) $12xy^2 + 16x$		$6x^2 + 6y^2 + 8x^2$		
28. If $f(x,y) = 2x^3 - 4y^2$ , what is the value of $f_x$ and $f_y$ at (3,2)  A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at (1,1,1)  A) 3 B) 2 C) 0 D) 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  B) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ C) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  11. If $x = r\cos\theta$ , $y = r\sin\theta$ then the value of $\frac{\partial (x,y)}{\partial (r,\theta)}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y} = \frac{\partial x}{\partial y}$ is:  A) $\frac{\partial x}{\partial y} = \frac{\partial x}{\partial y} = $	27.		$= 6xy^3$ then $f_{xyx}$	=		
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A) $f_x = 54$ , $f_y = -16$ B) $f_x = 16$ , $f_y = -54$ C) $f_x = 54$ , $f_y = 0$ D) $f_x = -54$ $f_y = -16$ 29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) 3 B) 2 C) 0 D) 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) $6x$ B) $3xy$ C) $5x$ D) $5xy$ 31. If $u = y^x$ then $\frac{\partial u}{\partial x}$ is  A) $y^x$ B) $y^x$ by $y$			- /			
29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) 3 B) 2 C) 0 D) 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) 6x B) 3xy C) 5x D) 5xy  31. If $u = y^x$ then $\frac{\partial u}{\partial x}$ is  A) $y^x$ B) $y^x logy$ C) $y^x logx$ D) $xy^{x-1}$ 32. If $x = r\cos\theta$ , $y = r\sin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is  A) r B) 1 C) 0 D) 2  33. $\vec{F}$ is said to be solenoidal if  A) $\nabla \times \vec{F} = \vec{0}$ B) $\nabla \cdot \vec{F} = 0$ C) $\nabla \cdot (\nabla \cdot \vec{F}) = 0$ D) $\nabla \times (\nabla \cdot \vec{F}) = 0$	28.					
29. If $f(x,y,z) = x^2 + xyz + z$ , then the value of $f_x$ at $(1,1,1)$ A) 3 B) 2 C) 0 D) 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) 6x B) 3xy C) 5x D) 5xy  31. If $u = y^x$ then $\frac{\partial u}{\partial x}$ is  A) $y^x$ B) $y^x logy$ C) $y^x logx$ D) $xy^{x-1}$ 32. If $x = r\cos\theta$ , $y = r\sin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is  A) r B) 1 C) 0 D) 2  33. $\vec{F}$ is said to be solenoidal if  A) $\nabla \times \vec{F} = \vec{0}$ B) $\nabla \cdot \vec{F} = 0$ C) $\nabla \cdot (\nabla \cdot \vec{F}) = 0$ D) $\nabla \times (\nabla \cdot \vec{F}) = 0$				$f_x = 16, \ f_y = -54$		
A) 3 B) 2 C) 0 D) 1  30. If $z = 3x^2y + 5y$ then $\frac{\partial^2 z}{\partial x \partial y}$ is:  A) 6x B) 3xy C) 5x D) 5xy  31. If $u = y^x$ then $\frac{\partial u}{\partial x}$ is  A) $y^x$ B) $y^x \log y$ C) $y^x \log x$ D) $xy^{x-1}$ 32. If $x = r\cos\theta$ , $y = r\sin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is  A) $r$ B) 1 C) 0 D) 2  33. $\vec{F}$ is said to be solenoidal if A) $\nabla \times \vec{F} = \vec{0}$ B) $\nabla \cdot \vec{F} = 0$ C) $\nabla \cdot (\nabla \cdot \vec{F}) = 0$ D) $\nabla \times (\nabla \cdot \vec{F}) = 0$						
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31. If $u = y^x$ then $\frac{\partial u}{\partial x}$ is  A) $y^x$ B) $y^x \log y$ C) $y^x \log x$ D) $xy^{x-1}$ 32. If $x = r\cos\theta$ , $y = r\sin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is  A) $r$ B) $r$ C) $0$ D) $2$ 33. $\vec{F}$ is said to be solenoidal if  A) $\nabla \times \vec{F} = \vec{0}$ B) $\nabla \cdot \vec{F} = 0$ C) $\nabla \cdot (\nabla \cdot \vec{F}) = 0$ D) $\nabla \times (\nabla \cdot \vec{F}) = 0$			B)	3xy		
A) $y^x$ B) $y^x logy$ C) $y^x logx$ D) $xy^{x-1}$ 32. If $x = rcos\theta$ , $y = rsin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is  A)			D)	5xy		
C) $y^x log x$ D) $xy^{x-1}$ 32. If $x = rcos\theta$ , $y = rsin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is  A)	31.	If $u = y^x$ then $\frac{\partial u}{\partial x}$ is				
32. If $x = rcos\theta$ , $y = rsin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is		A) $y^x$	B)	y <sup>x</sup> logy		
33. $\vec{F}$ is said to be solenoidal if  A) $\nabla \times \vec{F} = \vec{0}$ B) $\nabla \cdot \vec{F} = 0$ C) $\nabla \cdot (\nabla \cdot \vec{F}) = 0$ D) $\nabla \times (\nabla \cdot \vec{F}) = 0$		C) $y^x log x$		$xy^{x-1}$		
33. $\vec{F}$ is said to be solenoidal if  A) $\nabla \times \vec{F} = \vec{0}$ B) $\nabla \cdot \vec{F} = 0$ C) $\nabla \cdot (\nabla \cdot \vec{F}) = 0$ D) $\nabla \times (\nabla \cdot \vec{F}) = 0$	32.	If $x = r\cos\theta$ , $y = r\sin\theta$ then the value of $\frac{\partial(x,y)}{\partial(r,\theta)}$ is				
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$\nabla \cdot (\nabla \cdot \overrightarrow{F}) = 0 \qquad \qquad D) \qquad \nabla \times (\nabla \cdot \overrightarrow{F}) = 0$	33.	$\vec{F}$ is said to be solenoidal if				
		$\nabla \times \vec{F} = \vec{0}$	B)	$\nabla \cdot \vec{F} = 0$		
34. If $f(x,y) = xy + x^2$ then Hessian of $f$ is		$\nabla. (\nabla. \overrightarrow{F}) = 0$	D)	$\nabla \times (\nabla . \overrightarrow{F}) = 0$		
	34.	If $f(x, y) = xy + x^2$ then Hessian	of $f$ is			

	A)	$\begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix}$	B)	$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$	
	C)	$\begin{bmatrix} 2 & 0 \\ 0 & 0 \end{bmatrix}$	D)	$\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$	
35.	5. If $\vec{r} = x \hat{\imath} + y \hat{\jmath} + z \hat{k}$ then $curl(\vec{r}) =$				
	A)	1	B)	$\vec{r} = \hat{\imath} + \hat{\jmath} + \hat{k}$	
	C)	3	D)	$\vec{0}$	
36.	The gradient of $\varphi = xyz$ is				
	A)	0	B)	1	
	C)	$yz\hat{\imath} + xz\hat{\jmath} + xy\hat{k}$	D)	$xz\hat{\imath} + yz\hat{\jmath} + xy\hat{k}$	
37.	If $f(x)$	$(x,y) = 2xy + 7x^2$ then Hessian of $f$ is	•		
	A)	$\begin{bmatrix} 1 & 2 \\ 2 & 0 \end{bmatrix}$	B)	$\begin{bmatrix} 14 & 2 \\ 2 & 0 \end{bmatrix}$	
	C)	$\begin{bmatrix} 7 & 1 \\ 1 & 0 \end{bmatrix}$	D)	$\begin{bmatrix} 2 & 1 \\ 7 & 0 \end{bmatrix}$	
38.	If $\varphi =$	$x^2 + y^2 + z^2$ then $\nabla \varphi$ at (1,1,1) is	1		
	A)	$\hat{\imath} + 3\hat{\jmath} + 5\hat{k}$	B)	$\hat{\imath} + \hat{\jmath} + \hat{k}$	
	C)	$2\hat{\imath} + 2\hat{\jmath} + 2\hat{k}$	D)	$\hat{\imath} + 2\hat{\jmath} + \hat{k}$	
39.	A vect	or field with curl zero is called			
	A)	an irrotational vector field	B)	solenoidal vector field	
	C)	scalar field	D)	Convergent field	
40.	If $\vec{F} =$	= $x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ , the divergence of $\vec{F}$ is:			
	A)	0	B)	1	
	C)	3	D)	2	
41.	If $\vec{r} =$	$x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ then $div(\vec{r})$ is:			
	A)	1	B)	3	
	C)	$\hat{\imath} + \hat{\jmath} + \hat{k}$	D)	0	
42.	If $f(x)$	$(y) = 5xy + 2x^2$ then Hessian of f is			
	A)	$\begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix}$	B)	$\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$	
	C)	[4 5] [5 0]	D)	$\begin{bmatrix} 4 & 1 \\ 1 & 0 \end{bmatrix}$	

43.	43. If $\vec{F} = ax\hat{\imath} - by\hat{\jmath}$ is solenoidal then which of the following is true?			owing is true?	
	A)	a = b	B)	$a^2-b^2=0$	
	C)	a+b=0	D)	$a^2 + b^2 = 0$	
44.	If $\vec{F} = 6\hat{\imath} + \hat{\jmath} + by\hat{k}$ is an irrotational vector, then				
	A)	b=2	B)	b = -1	
	C)	b = 0	D)	b = 1	
45.	If $\phi$	$= x^3 + y^3 - 2z$ , then $\nabla \phi_{\text{at (1, }}$	-1.1) i	s	
	A)	$\hat{i} + \hat{j} + 2\hat{k}$	B)	$3\hat{i} + 3\hat{j} - 2\hat{k}$	
	C)	$\hat{i} + 3\hat{j} - 2\hat{k}$	D)	$3\hat{i} - 3\hat{j} - 2\hat{k}$	
46.	If $\overset{ ightarrow}{F}$	$\vec{r} = x\hat{i} + z\hat{j} + y\hat{k}$ then curl of $\vec{F} = \hat{K}$	=		
	A)	$\hat{i} + 2\hat{k}$	B)	$\hat{i} + \hat{j}$	
	C)	$\hat{i} + \hat{j} + 2\hat{k}$	D)	$\overrightarrow{0}$	
47.	$\phi =$	$xyz$ , then $\nabla \phi =$			
	A)	$yx\hat{i} + 4xz\hat{j} + xy\hat{k}$	B)	$yx\hat{i} + 2xz\hat{j} + 2xy\hat{k}$	
	C)	$yx\hat{i} + xz\hat{j} + xy\hat{k}$	D)	$yx\hat{i} + 2xz\hat{j} + xy\hat{k}$	
48.	A vector field with vanishing divergence is called				
	A)	Solenoidal vector field	B)	Scalar field	
	C)	Irrotational vector field	D)	Rotational vector field	
49.		roots of the auxiliary equation of a secon ant coefficients are real and equal, then the		plementary solution is of the form:	
	A)	$y_c = Ae^{m_1x} + Be^{m_2x}$	B)	$y_c = Ae^{mx} + Be^{mx}$	
	C)	$y_c = Ae^m + Bxe^m$	D)	$y_c = Ae^{mx} + Bxe^{mx}$	
50.		plution of the differential equation $x dx +$			
	A)	Hyperbola	B)	Circle with center at the origin	
	C)	Parabola whose vertex is at the origin	D)	Straight line passing through the origin	
51.	The fo	bllowing second order partial differential e			
	A)	Parabolic	B)	Hyperbolic	
	C)	Elliptic	D)	Circular	
52.		The particular integral of (			
	A)	cosx	B)	2 sinx	

	<b>C</b> )	2 cosx	D)	4 cosx
53.	Which	of the following equation is not a first	order lin	ear differential equation in $y$ ?
	A)	dy	B)	dy
		$\frac{dx}{dx} + x y = \cos x$		$\frac{dx}{dx}$ + y sec $x = e$
	C)	$\frac{dy}{dx} + x^2y = \cos^2 x$ $\frac{dy}{dx} + y\sin^2 x = x^3$	D)	$\frac{dy}{dx} + y \sec^2 x = e^x$ $\frac{dy}{dx} + x^2 y^2 = \tan x$
		CC/C		
54.		roots of the auxiliary equation of a sec		
		nt coefficients are purely imaginary, th	en the coi	mplementary solution is of the
	form:	A 222 0	D)	A so s O v + D sim O v
	A) C)	$y_c = A\cos\beta x$	B)	$y_c = A \cos \beta x + B \sin \beta x$ $y_c = e^{\alpha x} (A \cos \beta + B \sin \beta)$
55.	/	$y_c = A \sin \beta x$ rtial differential equation of the expres	D)	$y_c = e^{-ax}(A\cos\beta + B\sin\beta)$
33.		rtial differential equation of the expres	ssion $\mathbf{z} =$	a ux - by, where $a$ and $b$ are
	A)		B)	z = ny + ay
		z = px - qy		z = px + qy $nx + qy = 0$
56.	<u> </u>	z = p + q	D)	$\rho x + qy = 0$
50.	The following	z = p + q  Illowing second order partial differential	al equation	n is: $2\frac{\partial u}{\partial x^2} - x^2 \frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 0$
	A)	Parabolic	B)	Hyperbolic
	C)	Elliptic	D)	Circular
57.	Which	of the following function is a solution	of the dif	fferential equation $\frac{dy}{dx} = v$ ?
	A)	$y = 2a^{2x}$	B)	$\frac{dx}{dx} = \frac{1}{2} \frac{dx}{dx}$
	C)	$y = 3e^{2x}$ $y = e^{3x}$	D)	$y = 2e^x$ $y = e^{-x}$
58.	/	$y = e^{-x}$ oots of the auxiliary equation of a difference of a difference of a difference of the auxiliary equation of the auxiliary		
38.		oots of the auxiliary equation of a differential equation is:	erennai ed	$\mathbf{q}$ uation are $0$ , $1$ , $-1$ then the
	A)		B)	$(D^3 D^2)_{32} = 0$
	C)	$D^3 y = 0$ $(D^3 - 1)y = 0$	D)	$(D^3 - D^2)y = 0$ $(D^3 - D)y = 0$
59.	/			
39.	The partial differential equation of the expression $z = e^y g(x)$ , where $g(x)$ an arbitrary function, is:			
	A)	•	B)	$\partial z$
	11)	$z = \frac{\partial z}{\partial y}$		$z = \frac{\partial z}{\partial x}$
	C)	<u>θ</u>	D)	77 37
		$\frac{\partial z}{\partial x} = 0$		$\frac{\partial z}{\partial y} = 0$
60.	Which	of the following equation is not a hyper	erholic pa	uy artial differential equation?
00.	A)	$\frac{\partial^2 u}{\partial x^2}$	B)	$\partial^2 u = \partial^2 u$
	11)	$-2\frac{d^{2}u^{2}}{dx^{2}}-x^{2}\frac{d^{2}u^{2}}{dx^{2}}=0$		$\frac{\sigma u}{a_{2}^{2}} - \frac{\sigma u}{a_{2}^{2}} = 0$
	C)	$-2\frac{\partial^2 u}{\partial x^2} - x^2 \frac{\partial^2 u}{\partial y^2} = 0$ $xy\frac{\partial^2 u}{\partial x^2} - 3xy\frac{\partial^2 u}{\partial y^2} = 0$	D)	$\frac{\partial^2 u}{\partial x^2} - \frac{\partial^2 u}{\partial y^2} = 0$ $\frac{\partial^2 u}{\partial x^2} - y^2 \frac{\partial^2 u}{\partial y^2} = 0$
		$xy\frac{\partial^{-}u}{\partial x^{2}} - 3xy\frac{\partial^{-}u}{\partial x^{2}} = 0$	0)	$\frac{\partial^{-}u}{\partial x^{2}} - y^{2} \frac{\partial^{-}u}{\partial x^{2}} = 0$
<u></u>		$\frac{\partial x^2}{\partial x^2} = \frac{\partial y^2}{\partial x^2}$		$\frac{\partial x^2}{\partial x^2} = \frac{\partial y^2}{\partial y^2}$
61.		nction $y = C_1 e^{-2x} + C_2 e^{3x}$ is the gen		
	A)	$(D^{2} + D - 6)y = 0$ $(D^{2} + D + 6)y = 0$	B)	$(D^2 - D + 6)y = 0$ $(D^2 - D - 6)y = 0$
	C)	$(D^2 + D + 6)y = 0$	D)	
62. The partial differential equation obtained from $z = ay + bx$ , by eli			y + bx, by eliminating $a$ and $b$ is	
	A)	z = px + qy	B)	z = qx + py
	C)	z = p + q	D)	z = px - qy
63.	Which	of the following differential equation	is first ord	der linear differential equation in y?
	A)	$x^2y^2 + \frac{dy}{dx} = 0$	B)	$x + y\frac{dy}{dx} = y^3$
		$x^2y^2 + \frac{1}{dx} = 0$		$x + y \frac{1}{dx} = y^3$
-				

	$C)$ $x^4$	$+\frac{dy}{dx} = ay$	D)	$x^2y - y\frac{dy}{dx} = siny$	
64.	Which of the following function is a solution of the differential equation $\left(\frac{dy}{dx}\right)^2 = 0$ ?				
	A)	$y = e^x$	B)	$y = x^2$	
	C)	y = 25x	D)	y = cos cos x	
65.	The value	$y = 25x$ of $\int_0^1 \int_0^2 xy \ dx \ dy$ is			
	A)	2	B)	4	
	C)	0	D)	1	
66.	The value	of $\Gamma\left(\frac{1}{2}\right)$ is			
	A)	$\sqrt{\pi}$	B)	$\sqrt{\frac{\pi}{2}}$ $\sqrt{\pi}$	
	C)	$\sqrt{\pi}$	D)	$\sqrt{\pi}$	
		$\frac{\cdot}{2}$		$\frac{1}{2}$	
67.	The value	of $\int_0^a \int_0^x \int_0^y dz  dy  dx =$	1		
	A)	1	B)	0	
	A) C)	<u>a</u>	D)	0 <b>a</b> <sup>3</sup>	
		<del>-</del> 6		<u></u>	
68.	The value	of $\boldsymbol{\beta}\left(\frac{1}{2},\frac{1}{2}\right)$ is:			
	A)	1	B)	$\pi$	
	C)	-1	D)	$\sqrt{\pi}$	
69.	Area of a r	egion <b>R</b> in terms of polar co-c	ordinate is		
	A)	$\iint_R r dr d\theta$	B)	$\iint_{R} dr \ d heta$	
	C)	$\iint_{\mathbf{p}} r^2 dr \ d\theta$	D)	$\iint_{\mathbf{p}} (r+1) dr d\theta$	
70.	The value	of $\int_0^1 \int_0^1 \int_0^1 2z  dz  dx  dy$ is:			
	A)	2	B)	1	
	C)	1	D)	1	
		8		<u>4</u>	
71.	The value	of $\left(\Gamma\left(\frac{1}{2}\right)\right)^2$ is:			
	A)	$\sqrt{\pi}$	B)	$\frac{\pi}{}$	
				$\frac{\overline{2}}{\pi}$	
	C)	$\pi$	D)	$\frac{n}{4}$	
72.	For any <b>m</b>	$> 0, \ \beta(m,1) =$		4	
, 2.	A)	1	B)	m	
	C)	0	D)	1	
	,			$\overline{m}$	
73.	The value	of $\int_0^2 \int_0^y x  dx  dy$ is equal to			
	A)	4/5 4/3	B)	2/3	
	C)		D)	1/5	
74.			is the region abo	eve the $x - axis$ and within a	
		ered at the origin of radius 2.			
	A)	$4\pi$	B)	$8\pi$	

	C)	$rac{5}{4}\pi$	D)	$2\pi$		
75.	The vol	ume of the solid bounded by the plane	es x = 0,	y = 0, $z = 0$ and $x + y + z = 0$		
	1 is giv	ren by:				
	A)	$\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dz  dy  dx$	B)	$\int_0^1 \int_0^x \int_0^{x+y} dz  dy  dx$		
	C)	$\int_{0}^{1} \int_{0}^{1-x} \int_{0}^{1-y} dz  dy  dx$	D)	$\int_0^1 \int_0^x \int_0^{x-y} dz  dy  dx$		
76.	The value	ue of $\boldsymbol{\beta}(3,2)$ is:				
	A)	1/12	B)	1/2		
	(C)	1/10	D)	1/24		
77.	$\gamma(\frac{1}{2})$	=				
	A)	$\sqrt{m{\pi}}$	B)	$2\sqrt{\pi}$		
	C)	1	D)	0		
78.	$\int_{0}^{1} \int_{0}^{x} y dy dx =$					
	A)	1	B)	1		
		$ \frac{\frac{1}{2}}{\frac{1}{6}} $		$\frac{\overline{4}}{4}$		
	C)	1	D)			
		<del>6</del>		$\frac{1}{8}$		
79.	$\int_{0}^{1} \int_{0}^{2} dx$	<i>xdy</i> =				
	A)	1	B)	0		
	C)	2	D)	3		
80.	The value of $\iint_{0}^{c} \iint_{0}^{b} dz dy dx  is $					
	A)	ab	B)	<u>ab</u>		
		$\overline{c}$		$\overline{2c}$		
	C)	abc	D)	ab		