INDIAN SCHOOL AL WADI AL KABIR

Class XII, Mathematics ***Worksheet- Continuity and Differentiability***

14-06-20

OBJECTIVE TYPE (1 Mark)

Q.1.	$y = 2^x, then\ \frac{dy}{dx}$							
	A	2^x	**B**	$x2^{x-1}$	**C**	$2^x log2$	**D**	$2^x loge$
Q.2.	$y = \sin(x^x), then\ \frac{dy}{dx}$							
	A	$x^x cosx^x(1 + logx)$	**B**	$x^x cosx^x$	**C**	$x^x cosx.logx$	**D**	$x^x sinx^x.logx$
Q.3.	$If\ \sqrt{x} + \sqrt{y} = \sqrt{a}\ , then\ \frac{dy}{dx}$							
	A	$-\frac{\sqrt{x}}{\sqrt{y}}$	**B**	$\frac{\sqrt{y}}{\sqrt{x}}$	*C*	$\frac{\sqrt{x}}{\sqrt{y}}$	**D**	$-\frac{\sqrt{y}}{\sqrt{x}}$
Q.4.	$If\ y = \log(x + \sqrt{x^2 + a^2}), then\ \frac{dy}{dx}$							
	A	$\frac{1}{x + \sqrt{x^2 + a^2}}$	**B**	$\frac{1}{\sqrt{x^2 + a^2}}$	**C**	$\frac{1}{2(x + \sqrt{x^2 + a^2})}$	**D**	$\frac{2x}{x + \sqrt{x^2 + a^2}}$
Q.5.	$If\ y = tan^{-1}\left(\frac{cosx - sinx}{cosx + sinx}\right), then\ \frac{dy}{dx}$							
	A	1	**B**	-1	**C**	$\frac{1}{1 + x^2}$	**D**	$\frac{1}{(cosx - sinx)^2}$
Q6	$If\ x = at^2, y = 4at, then\ \frac{dy}{dx}$							
	A	$\frac{1}{4t}$	**B**	$\frac{1}{2t}$	**C**	2t	**D**	$\frac{2}{t}$
Q7	$If\ y = tan^{-1}x + tan^{-1}\frac{1}{x}$, then $\frac{dy}{dx}$							
	A	0	**B**	$\frac{1}{1 + x^2}$	**C**	$\frac{x}{1 + x^2}$	**D**	1

Q8	$If\ y = xe^y, then\ \frac{dy}{dx}$							
	A	$\frac{y}{1-y}$	**B**	$\frac{y}{x(1-y)}$	**C**	$\frac{x}{1-y}$	**D**	$\frac{x}{y(1-y)}$
Q9	$If\ x^2y^3 = (x+y)^5, then\ \frac{dy}{dx}$							
	A	$\frac{x}{y}$	**B**	$-\frac{x}{y}$	**C**	$\frac{y}{x}$	**D**	$-\frac{x}{y}$
Q10	$If\ x^y - y^x = 0, then\ \frac{dy}{dx}$							
	A	$\frac{y - xlogy}{x - ylogx}$	**B**	$\frac{y(y - xlogy)}{x(x - ylogx)}$	**C**	$\frac{y(y + xlogy)}{x(x + ylogx)}$	**D**	$\frac{x(y - xlogy)}{y(x - ylogx)}$
Q11	$If\ y = 10^{10^x}, then\ \frac{dy}{dx}$							
	A	$10^{10^x}log10$	**B**	$10^{10^x}10^x log10$	**C**	$10^{10^x}10^x(log10)^2$	**D**	10^{10^x}
Q12	$The\ number\ c\ which\ satisfy\ the\ conclusion\ of\ Rolle's\ theorem\ for\ x^2 - 2x - 8, x \in [-1, 3]$							
	A	1	**B**	-1	**C**	3	**D**	2
Q13	$The\ number\ c\ which\ satisfy\ the\ conclusion\ of\ mean\ value\ theorem\ for\ x^2 + x - 1, x \in [0, 4]$							
	A	-1	**B**	0	**C**	1	**D**	2
Q14	$If\ y = log_{10}(cosx), then\ \frac{dy}{dx}$							
	A	$-tanx$	**B**	$\frac{1}{log10.cosx}$	**C**	$\frac{tanx}{log10}$	**D**	$-\frac{tanx}{log10}$
Q15	$The\ function\ f(x) = \begin{cases} \frac{sin3x}{x}, x \neq 0 \\ \frac{k}{2}, x = 0 \end{cases}$ $is\ continuous\ at\ x = 0\ .Then\ value\ of\ k$							
	A	6	**B**	9	**C**	12	**D**	3

Q16	$The\ function\ f(x) = \begin{cases} \frac{kcosx}{\pi - 2x}, x \neq \frac{\pi}{2} \\ 5 \quad , x = \frac{\pi}{2} \end{cases} is\ continuous\ at\ x = \frac{\pi}{2}\ .Then\ value\ of\ k$							
	A	5	**B**	10	**C**	2	**D**	π
Q17	$If\ x = a(\theta - sin\theta), y = a(1 + cos\theta), then\ \frac{dy}{dx} at\ \theta = \frac{\pi}{3}$							
	A	$\sqrt{3}$	**B**	$\frac{1}{\sqrt{3}}$	**C**	$-\sqrt{3}$	**D**	$-\frac{1}{\sqrt{3}}$
Q18	$If\ x = \sqrt{a^{sin^{-1}t}}, y = \sqrt{a^{cos^{-1}t}}, then\ \frac{dy}{dx}$							
	A	$\frac{x}{y}$	**B**	$-\frac{x}{y}$	**C**	$-\frac{y}{x}$	**D**	$\frac{y}{x}$
Q19	$If\ y = asinx + bcosx, then\ \frac{d^2y}{dx^2} + y =$							
	A	$a + b$	**B**	$a - b$	**C**	2y	**D**	0
Q20	$Derivative\ of\ cos^{-1}(2x^2 - 1)\ with\ respect\ to\ cos^{-1}x, 0 \leq x \leq 1$							
	A	2	**B**	$\frac{1}{2\sqrt{1 - x^2}}$	**C**	$\frac{1}{\sqrt{1 - x^2}}$	**D**	$\frac{1}{2}$
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