1. **A function of the form of $f(x, y) = 0$ is called - - - - -**

(A) parametric (B) implicit (C) explicit (D) identity

Ans.(B) **(Federal Board 2014)**

2. **The output of a function is also called - - - - -**

(A) result (B) domain (C) image (D) none of these

Ans.(C) **(Bahawalpur Board 2015)**

3. **Which of the following is an odd function?**

(A) cosx (B) coshx (C) sinhx (D) $\sin^2 x$

Ans.(C) **(D.G.Khan Board 2014)**

4. $\lim_{x \to 0} e^{\frac{1}{x}} =$ **- - - - -**, $x < 0$

(A) -1 (B) 0 (C) 1 (D) ∞

Ans.(B) **(D.G.Khan Board 2014)**

5. **If** $f(x) = \sqrt{x+1}$ **then domain of f is - - - - -**

(A) $(0, \infty)$ (B) $(1, \infty)$ (C) $[-1, \infty)$ (D) $(-\infty, \infty)$

Ans.(C) **(Sahiwal Board 2014)**

6. **If f is any function then** $\frac{f(x) + f(-x)}{2}$ **is always - - - - -**

(A) even (B) odd (C) neither even nor odd (D) zero

Ans.(A) **(Sahiwal Board 2015)**

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$\lim_{x \to a} \frac{x^3 - a^3}{x - a} =$ -----

(A) undefined (B) $3a^2$ (C) a^2 (D) 0

(Sargodha Board 2014)

Ans.(B)

$\lim_{x \to 0} \frac{\sin x^\circ}{x^\circ} =$ -----

(A) $\frac{\pi}{180}$ (B) $\frac{180}{\pi}$ (C) 1 (D) 180π

(Faisalabad Board 2014)

Ans.(C)

$\lim_{\theta \to 0} \frac{1 - \cos p\theta}{1 + \cos q\theta}$ equals -----

(A) 0 (B) $\frac{p}{q}$ (C) $\frac{p^2}{q^2}$ (D) -1

(Lahore Board 2014)

Ans.(A)

). $\lim_{x \to 0} \frac{\sin 4x}{\sin 2x}$ is equal to -----

(A) 1 (B) 2 (C) 4 (D) 6

(Lahore Board 2015)

Ans.(B)

1. $\lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^{2n} =$ -----

(A) zero (B) e^{2n} (C) e^2 (D) e^n

(Federal Board 2016)

Ans.(C)

2. If f(x) is continuous at point x = a, then:

(A) $f(x) = \lim_{x \to a} f(x)$ (B) $f(a) = \lim_{x \to a} f(x)$ (C) $f(0) = \lim_{x \to a} f(x)$ (D) $f(a) = \lim_{x \to 0} f(x)$

(Rawalpindi Board 2017)

Ans.(B)

3. The perimeter of a square as a function of its area A is -----

(A) $P = \sqrt{A}$ (B) $P = 4\sqrt{A}$ (C) $P = 4A$ (D) $P = \frac{1}{4}\sqrt{A}$

(Faisalabad Board 2017)

Ans.(B)

4. $x = at^2, y = 2at$ are parametric equations of a/an -----

(A) circle (B) ellipse (C) parabola (D) hyperbola

(Multan Board 2017)

Ans.(C)

5. $\lim_{x \to 1} \frac{x^3 - 3x^2 + 3x - 1}{x - 1}$ equals -----

(A) 0 (B) -1 (C) 1 (D) 3

(Multan Board 2014)

Ans.(A)

6. If $f(x) = x^2$, then range of f is -----

(A) rational number (B) irrational number

(C) integer (D) all non-negative real numbers

(Azad Jammu Kashmir Board 2017)

Ans.(D)

7. $\text{sech}^2 x =$ is equal to -----

(A) $\cosh^2 x$ (B) $1 - \tanh^2 x$ (C) $1 - \coth^2 x$ (D) $\tanh^2 x - 1$

(Bahawalpur Board 2016)

Ans.(B)

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18. **The function $f(x) = \frac{2+3x}{2x}$ is not continuous at -----**

(A) $x = -3$ (B) $x = -\frac{2}{3}$ (C) $x = 0$ (D) $x = 1$

Ans.(C) **(Rawalpindi Board 2016)**

19. **$\cosh^{-1}x$ = -----**

(A) $\ell n\left(x + \sqrt{x^2 - 1}\right)$ (B) $\ell n\left(x - \sqrt{x^2 + 1}\right)$ (C) $\frac{1}{2}\ell n\left(\frac{1+x}{1-x}\right)$ (D) $\frac{1}{2}\ell n\left(\frac{x+1}{x-1}\right)$

Ans.(A) **(Lahore Board 2014-II)**

20. **$f(x) = \cos x + \sin x$ is ----- function.**

(A) even (B) odd (C) both even and odd (D) neither even nor

Ans.(D) **(Bahawalpur Board 2014)**

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1. $\frac{d}{dx}\left[\frac{1}{g(x)}\right]$ = - - - - -

(A) $\frac{1}{g^2(x)}$ (B) $\frac{-g(x)}{[g(x)]}$ (C) $\frac{1}{[g(x)]^2}$ (D) $\frac{-g'(x)}{[g(x)]^2}$

Ans.(D) **(Federal 2014, Faisalabad 2017)**

2. **If $f(x) = x^{\frac{2}{3}}$, then $f'(8)$ = - - - - -**

(A) $\frac{1}{2}$ (B) $\frac{2}{3}$ (C) $\frac{1}{3}$ (D) 3

Ans.(C) **(Lahore, Bahawalpur 2014, Sahiwal 2017)**

3. **If $y = e^{3x}$, then y_3 is - - - - -**

(A) e^{3x} (B) e^3 (C) $9e^{3x}$ (D) $27e^{3x}$

Ans.(D)

4. **If $f'(c) = 0$, then f has relative maxima at x = c if - - - - -**

(A) $f''(c) = 0$ (B) $f''(c) > 0$ (C) $f''(c) < 0$ (D) $f''(c) \geq 0$

Ans.(C) **(Bahawalpur 2014, Lahore 2016)**

5. **If $y = \tanh x$, then $\frac{dy}{dx}$ = - - - - -**

(A) $\text{sech}^2 x$ (B) $2\text{sech}x$ (C) $\text{sech}x.\coth^2 x$ (D) $-2\text{sech}.\coth x$

Ans.(A) **(Bahawalpur 2015)**

6. **The notation used by Langrange for derivative is - - - - -**

(A) df/dx (B) $f''(x)$ (C) $f'(x)$ (D) $Df(x)$

Ans.(C) **(D.G.Khan 2014)**

7. **If $f(x) = \sin x$ then $f'(\cos^{-1} x)$ = - - - - -**

(A) $\cos x$ (B) $\sin x$ (C) $-x$ (D) x

Ans.(D) **(Sahiwal 2015)**

8. **$f'(2)$ = - - - - -**

(A) $\lim_{x \to 0} \frac{f(x) - f(2)}{x - 2}$ (B) $\lim_{x \to 2} \frac{f(x) - f(0)}{x}$ (C) $\lim_{x \to 0} \frac{f(x) - f(2)}{x}$ (D) $\lim_{x \to 2} \frac{f(x) - f(2)}{x - 2}$

Ans.(D) **(Sahiwal 2015)**

9. $\frac{d}{dx}(2 - \sqrt{x})$ = - - - - -

(A) $2 - \frac{1}{2\sqrt{x}}$ (B) $0 - \sqrt{1}$ (C) $\frac{1}{2\sqrt{x}}$ (D) $-\frac{1}{2\sqrt{x}}$

Ans.(D) **(Multan 2015)**

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10. Differentiating x^6 w.r.t. x^3, we get - - - - -

(A) $5x^4$ (B) $3x^2$ (C) $2x^2$ (D) $2x^3$

Ans.(D) (Faisalabad 2014)

11. $\frac{d}{dx}|x|$ at $x = 0$ is - - - - -

(A) 1 (B) -1 (C) 0 (D) none of these

Ans.(D) (Faisalabad 2015)

12. If $f(x + h) = 2^{x+h}$, then $f'(x)$ equals - - - - -

(A) 2^{x+h} (B) $\frac{2}{\ell n 2}$ (C) $2^x \ell n 2$ (D) 2^x

Ans.(C) (Lahore 2014)

13. If $4y + 3x + 7 = 0$ then $\frac{dy}{dx}$ is - - - - -

(A) $\frac{3}{4}$ (B) $-\frac{3}{4}$ (C) $-\frac{4}{3}$ (D) $\frac{2}{3}$

Ans.(B) (Lahore 2014, Bahawalpur 2016)

14. $\forall x \in (a, b)$ a function $f(x)$ is said to be increasing in (a, b), if - - - - -

(A) $f(x) > 0$ (B) $f'(x) < 0$ (C) $f'(x) > 0$ (D) $f'(x) = 0$

Ans.(C) (Gujranwala 2014)

15. $\frac{d}{dx}(e^{\ell n x^2}) =$ - - - - -

(A) $e^{\ell n x^2}$ (B) $e^{2x \ell n x^2}$ (C) $2xe^{\ell n x^2}$ (D) $2x$

Ans.(D) (Faisalabad 2016)

If $f(x) = f(0) + f'(0) + \frac{f''(0)}{2!}x^2 + \ldots + \frac{f''(0)}{n!} + \ldots$ is called:

(A) Taylor series (B) Binomial series (C) Laurent series (D) Maclaurin series

Ans.(D) (Lahore 2016)

The critical value of $f(x) = x^2 - x - 2$ equals - - - - -

(A) $\frac{1}{2}$ (B) $-\frac{1}{2}$ (C) 2 (D) -2

Ans.(A) (Rawalpindi 2017)

Which of the following represents $\frac{dy}{dx}$ if $\sin x = e^y$?

(A) $-\cot x$ (B) $\tan x$ (C) $-\cot x$ (D) $\cot x$

Ans.(D) (Federal 2017)

$\frac{d}{dx}(5^{bx})$ is equal to - - - - -

(A) $b5^{bx-1}$ (B) $bx5^{bx-1}$ (C) $b5^b$ (D) $5^{bx}.\ell n 5.b$

Ans.(D) (Multan 2015)

$\frac{d}{dx}\left(x - \frac{\cos 2x}{2}\right)$ is equal to - - - - -

(A) $\sin x + \cos x$ (B) $(\sin x + \cos x)^2$ (C) $\sin x - \cos x$ (D) $(\sin x - \cos x)^2$

Ans.(B) (Multan 2014)

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$\int e^{-x}(\cos x - \sin x)\,dx =$ - - - - -

(A) $e^{-x}\sin x + c$ (B) $-e^{-x}\sin x + c$ (C) $e^{-x}\cos x + c$ (D) $-e^{-x}\cos x + c$

(Federal Board 2014)

Ans.(A)

$\int (a-2x)^{\frac{1}{2}}\,dx =$ - - - - -

(A) $\frac{1}{3}(a-2x)^{\frac{1}{3}} + c$ (B) $-\frac{1}{3}(a-2x)^{\frac{3}{2}} + c$ (C) $\frac{1}{3}(a-2x)^{\frac{1}{2}} + c$ (D) $-\frac{1}{3}(a-2x)^{\frac{1}{2}} + c$

(Federal Board 2014)

Ans.(B)

The solution of the differential equation $ydx + xdy = 0$:

(A) $\ell n(xy) = 0$ (B) $\ell n\frac{x}{y} = c$ (C) $xy = c$ (D) $\ell n\frac{y}{x} = c$

(Bahawalpur Board 2014)

Ans.(C)

$\int_{-\pi}^{\pi} \frac{\sec^2 x}{1+\tan x}\,dx =$ - - - - -

(A) 1 (B) $\ell n\,2$ (C) 2 (D) 3

(Bahawalpur Board 2014)

Ans.(B)

$\int a^x\,dx =$ - - - - -

(A) $a^x \ell n\,a + c$ (B) $a^x + c$ (C) $\frac{a^x}{x} + c$ (D) $\frac{a^x}{\ell n\,a} + c$

(D.G.Khan Board 2014)

Ans.(D)

$\int_{-\pi}^{\pi} \sin x\,dx =$ - - - - -

(A) 0 (B) 2 (C) 4 (D) 6

(D.G.Khan Board 2014)

Ans.(C)

$\int (\cos^2 x + \sin^2 x)\,dx =$ - - - - -

(A) $\sin x + \cos x + c$ (B) $2\sin x + 2\cos x + c$ (C) $-\sin x + \cos x + c$ (D) $x + c$

(D.G.Khan Board 2014)

Ans.(D)

$\int e^{\sin x}\cos x\,dx =$ - - - - -

(A) $\ell n \sin x + c$ (B) $\ell n \cos x + c$ (C) $e^{\cos x} + c$ (D) $e^{\sin x} + c$

(Sahiwal Board 2014)

Ans.(D)

If $\int xe^{x^2}\,dx = ke^{x^2}$ then $k =$ - - - - -

(A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) $\frac{x}{3}$ (D) $\frac{x}{2}$

(Sahiwal Board 2015)

Ans.(B)

For $\int -\frac{1}{\sqrt{a^2+x^2}}\,dx$, suitable substitution is:

(A) $x = \sin\theta$ (B) $x = a\sin\theta$ (C) $x = a\tan\theta$ (D) $x = \tan\theta$

(Multan Board 2015)

Ans.(D)

$\int_{-1}^{1} |x|\,dx$ equals:

(A) 0 (B) 1 (C) 2 (D) $\frac{1}{2}$

(Sargodha Board 2014)

Ans.(B)

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12. $\int a^3\,dx =$ -----

(A) $\frac{a^4}{4} + c$ (B) $3a^2 + c$ (C) $a^3 + c$ (D) none of these

Ans.(D) (Faisalabad Board 2014)

13. $\int_0^1 (4x + k)dx = 4$, then k will be:

(A) $-\frac{1}{3}$ (B) 0 (C) 1 (D) 2

Ans.(D) (Rawalpindi Board 2014)

14. $\int e^x \left(\frac{1}{x} + \ell n\, x\right) dx$ is equal to:

(A) $e^x + \ell n\, x$ (B) $e^x \ell n\, x$ (C) $\ell n\, x$ (D) e^x

Ans.(B) (AJK Board 2017)

15. $\int \cot^3 x\,(-\operatorname{cosec}^2 x)\,dx =$ -----

(A) $\frac{\cot^3 x}{3}$ (B) $-\frac{\cot^3 x}{3}$ (C) $\frac{\cot^4 x}{4}$ (D) $-\frac{\cot^4 x}{4}$

Ans.(C) (Bahawalpur Board 2016)

16. $\int \frac{\sin 2x}{\sin x}\,dx =$ -----

(A) sin 2x (B) 2 sin 2x (C) $\frac{1}{2}\sin x$ (D) 2 sin x

Ans.(D) (Rawalpindi Board 2016)

17. $\int \sec x\,dx =$ -----

(A) sec x tan x + c (B) $\sec^2 x \tan x + c$ (C) $\ell n\,(\sec x - \tan x) + c$ (D) $\ell n(\sec x + \tan$

Ans.(D) (Lahore Board 2017)

18. Applying initial value conditions in solution of differential equations, we get -----

(A) general solution (B) particular solution (C) no solution (D) infinite solut

Ans.(B) (Sargodha Board 2017)

19. $\int \sin ax\,dx =$ -----

(A) $\frac{-\cos ax}{a}$ (B) cos ax (C) a cosec ax (D) a sec ax

Ans.(A) (Multan Board 2016)

20. If $v = x^3$, then differential of v is:

(A) $3x^2$ (B) $3x^2 dv$ (C) $x^3 dv$ (D) $3x^2 dx$

Ans.(D) (Gujranwala Board 2017)

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