

Section-A (MCQ's)

Q.1 Choose the correct answer for each from the given options:

- (I) $\int \frac{ax+b}{ax^2+2bx+c} dx =$ _____
 (a) $2 \ln|ax^2+2bx+c| + c$ (b) $\ln|ax+b| + c$ (c) $\ln|ax^2+2bx+c| + c$
 (D) $\frac{1}{2} \ln|ax^2+2bx+c| + c$
- (ii) If $A = \int_0^{\pi} \sqrt{1-\cos^2 x} dx$, then $A =$ _____
 (a) 0 (b) 2 (c) -2 (d) None of these
- (iii) The point of concurrent of altitudes of a triangle is called _____
 (a) Circum-centre (b) In-centre (c) Centroid (d) Orthocentre
- (iv) $ax^2 + 2hxy + by^2 = 0$ represent a pair of orthogonal lines If sum of the coefficients of x and y is:
 (a) 1 (b) 0 (c) -1 (d) 2
- (v) If $90^\circ < \theta < 180^\circ$, then slope is:
 (a) Undefined (b) Positive (c) Negative (d) Same
- (vi) $\lim_{x \rightarrow 0} (1-3x)^{\frac{2}{x}} =$ _____
 (a) e^3 (b) e^6 (c) e^{-6} (d) e^{-3}
- (vii) A function $f: A \rightarrow B$ is said to be _____, if the range of f is B .
 (a) Bijective (b) Surjective (c) Injective (d) None of these
- (viii) $\int \frac{1}{x \ln x} dx =$ _____
 (a) $\ln|x| + c$ (b) $\ln|\ln x| + c$ (c) $\ln x + c$ (d) $\frac{1}{x} \ln x + c$
- (ix) The distance between two parallel lines $4x + 3y + 2 = 0$ and $4x + 3y + 8 = 0$ is:
 (a) $\frac{13}{2}$ (b) $\frac{59}{2}$ (c) $\frac{6}{5}$ (d) $\frac{2}{5}$
- (x) If the slope of tangent is $\sqrt{3}$, then the angle is:
 (a) 30° (b) 60° (c) 45° (d) None of these
- (xi) $(1, 5) \cap [3, 7]$
 (a) $(1, 7]$ (b) $(3, 5)$ (c) $[3, 5)$ (d) $(3, 5]$
- (Xii) If $f(x) = \sqrt{x+2}$ then range of f is:
 (a) $(0, \infty)$ (b) $(-\infty, +\infty)$ (c) $(-2, +\infty)$ (d) $[-2, \infty)$
- (xiii) If $y = 5e^{3x-4}$, then $\frac{dy}{dx} =$ _____
 (a) $15e^{3x-4}$ (b) $5e^{3x+4}$ (c) $\frac{e^{3x-4}}{3}$ (d) $(3x-4)e^{3x-4}$
- (Xiv) The vertex of the parabola $y = 5(x-2)^2 + 7$ is:
 (a) $(2, 0)$ (b) $(2, -7)$ (c) $(-2, 7)$ (d) $(2, 7)$
- (xv) The set $S(c, r) = \{px, y\} : |cp| = r$ contains centre c if:
 (a) $r=0$ (b) $r < 0$ (c) $r > 0$ (d) $r = \infty$
- (Xvi) $\int e^{3x}(3 \sin x + \cos x) dx =$ _____
 (a) $e^{3x} \sin x + c$ (b) $3e^{3x} \sin x + c$ (c) $e^{3x} \cos x + c$ (d) None of these
- (xvii) If $\vec{u}, \vec{v}, \vec{w}$ are contermious edges of a parallelpiped, then its volume is:
 (a) $|\vec{u} \times \vec{v}|$ (b) $[\vec{u} \vec{v} \vec{w}]$ (c) $\vec{u} \cdot \vec{v} \cdot \vec{w}$ (d) $\vec{u} \times \vec{v} \times \vec{w}$
- (xviii) The centre of circle $3x^2 + 3y^2 + 6x + 12y - 7 = 0$ is:
 (a) $(2, -4)$ (b) $(1, -2)$ (c) $(-2, 4)$ (d) $(-1, 2)$