AME CET Mathematics

Sample Paper – 2

Duration: 20 Minutes **Maximum Marks: 80**

Instructions

- This paper contains **20** Multiple Choice Questions (Single Correct Answer), modelled on the Mathematics section of **AME CET** entrance.
- Each correct answer carries **+4 marks**. Each wrong answer carries -1 **mark**. Unattempted questions carry **0 marks**.
- Only **one** option is correct per question. Choose carefully.
- Syllabus level: **Class 11 and 12 NCERT Mathematics** (Sets and Relations to Probability and Statistics).
- Use of mobile phones, calculators, or any electronic gadget is strictly prohibited.

Q1. The value of $\int_0^{\pi/2} x\cos x\,dx$ is:

(A) 1

(B) $\frac{\pi}{2}$

(C) $\frac{\pi}{2}-1$

(D) $\frac{\pi}{2}+1$

Q2. The value of $\int_0^{\pi} \sin x\,dx$ is:

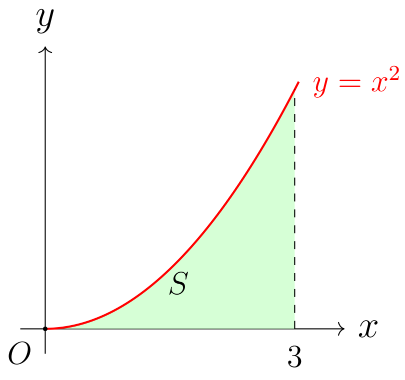
(A) 0

(B) 1

(C) π

(D) 2

Q3. The area of the region bounded by the curve $y = x^2$, the x-axis, and the line $x = 3$, shown shaded below, is:



(A) 9

(B) 27

(C) $\dfrac{27}{2}$

(D) 3

Q4. The equation of the circle with centre $(1, 2)$ and radius 3, in general form, is:

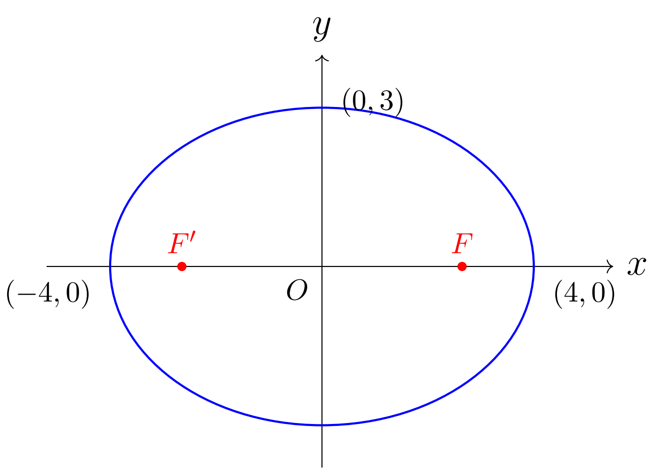
(A) $x^2 + y^2 + 2x + 4y - 4 = 0$

(B) $x^2 + y^2 - 2x - 4y - 4 = 0$

(C) $x^2 + y^2 - 2x - 4y + 4 = 0$

(D) $x^2 + y^2 - 2x - 4y + 14 = 0$

Q5. The eccentricity of the ellipse $\dfrac{x^2}{16} + \dfrac{y^2}{9} = 1$, sketched below, is:



(A) $\frac{3}{4}$

(B) $\frac{\sqrt{7}}{3}$

(C) $\frac{\sqrt{7}}{4}$

(D) $\frac{4}{\sqrt{7}}$

Q6. The coordinates of the focus of the parabola $y^2 = 8x$ are:

(A) $(2,\ 0)$

(B) $(0,\ 2)$

(C) $(-2,\ 0)$

(D) $(4,\ 0)$

Q7. If $A = \begin{pmatrix} 2 & 3 \\ 1 & 4 \end{pmatrix}$, then $\det(A)$ equals:

(A) 11

(B) -5

(C) 8

(D) 5

Q8. If $A = \begin{pmatrix} 3 & 1 \\ 2 & 1 \end{pmatrix}$, then A^{-1} equals:

(A) $\begin{pmatrix} 1 & 1 \\ 2 & 3 \end{pmatrix}$

(B) $\begin{pmatrix} 1 & -1 \\ -2 & 3 \end{pmatrix}$

(C) $\begin{pmatrix} 3 & -1 \\ -2 & 1 \end{pmatrix}$

(D) $\begin{pmatrix} -1 & 1 \\ 2 & -3 \end{pmatrix}$

Q9. $\lim_{x \to 0} \frac{1 - \cos x}{x^2}$ equals:

(A) 0

(B) 1

(C) $\frac{1}{2}$

(D) 2

Q10. If $y = x^3 e^x$, then $\frac{dy}{dx}$ is:

(A) $3x^2 e^x$

(B) $x^3 e^x$

(C) $x^2 e^x (3 - x)$

(D) $x^2 e^x (x + 3)$

Q11. $\cos(A + B) \cdot \cos(A - B)$ equals:

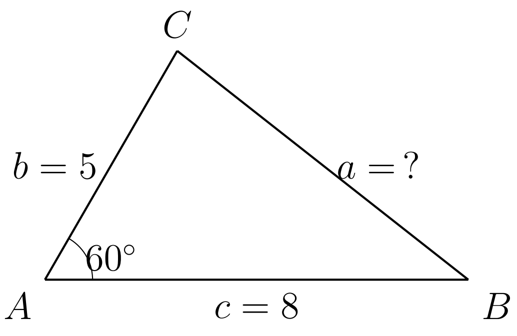
(A) $\cos^2 A - \sin^2 B$

(B) $\cos^2 A + \sin^2 B$

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

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

Q12. In triangle ABC, $\angle A = 60°$, $b = 5$ and $c = 8$. The length of side a is:



(A) $\sqrt{129}$

(B) 7

(C) $\sqrt{89}$

(D) $\sqrt{39}$

Q13. Two fair dice are thrown together. The probability that the sum of the numbers shown is 7 is:

(A) $\frac{1}{12}$

(B) $\frac{5}{36}$

(C) $\frac{1}{6}$

(D) $\frac{7}{36}$

Q14. From a group of 5 boys and 4 girls, 3 students are chosen at random. The probability that all three chosen are boys is:

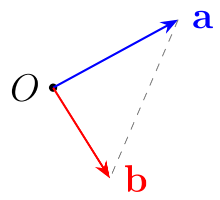
(A) $\frac{1}{14}$

(B) $\frac{5}{14}$

(C) $\frac{10}{21}$

(D) $\frac{5}{42}$

Q15. If $\mathbf{a} = 3\hat{i} + \hat{j} + 2\hat{k}$ and $\mathbf{b} = \hat{i} + 2\hat{j} - \hat{k}$, the value of $\mathbf{a} \cdot \mathbf{b}$ is:



(A) 7

(B) -3

(C) 1

(D) 3

Q16. If $|\mathbf{a}| = 2$, $|\mathbf{b}| = 5$ and the angle between $\mathbf{a}$ and $\mathbf{b}$ is 30°, then $|\mathbf{a} \times \mathbf{b}|$ equals:

(A) 5

(B) 10

(C) $5\sqrt{3}$

(D) $\frac{5}{2}$

Q17. The number of distinct arrangements of the letters of the word **APPLE** is:

(A) 120

(B) 60

(C) 24

(D) 30

Q18. The sum of the first 10 natural numbers $1 + 2 + 3 + \cdots + 10$ is:

(A) 45

(B) 100

(C) 55

(D) 50

Q19. The distance between the points $(1, 2, 3)$ and $(4, 6, 3)$ is:

(A) 5

(B) $\sqrt{34}$

(C) 7

(D) $\sqrt{43}$

Q20. The general solution of the differential equation $\frac{dy}{dx} = x$ is:

(A) $y = x + C$

(B) $y = \frac{x^2}{2} + C$

(C) $y = x^2 + C$

(D) $y = Cx$

Detailed Solutions

Q1.

Solution

Concept – Integration by Parts:
$\int u\,dv = uv - \int v\,du$. Choose $u = x$, $dv = \cos x\,dx$.

Step 1 – Assign u and dv:

$$u = x \;\Rightarrow\; du = dx, \qquad dv = \cos x\,dx \;\Rightarrow\; v = \sin x$$

Step 2 – Apply the formula:

$$\int_0^{\pi/2} x\,\cos x\,dx = \Big[x\,\sin x\Big]_0^{\pi/2} - \int_0^{\pi/2} \sin x\,dx$$

Step 3 – Evaluate the first term:

$$\Big[x\,\sin x\Big]_0^{\pi/2} = \frac{\pi}{2}\sin\frac{\pi}{2} - 0\cdot\sin 0 = \frac{\pi}{2}\cdot 1 = \frac{\pi}{2}$$

Step 4 – Evaluate the integral:

$$\int_0^{\pi/2} \sin x\,dx = \Big[-\cos x\Big]_0^{\pi/2} = -\cos\frac{\pi}{2} - (-\cos 0) = -0 + 1 = 1$$

Step 5 – Combine:

$$\frac{\pi}{2} - 1$$

Why other options are wrong:

- (A) 1: keeping only the subtracted integral.
- (B) $\frac{\pi}{2}$: dropping the subtracted integral entirely.
- (D) $\frac{\pi}{2} + 1$: sign error in the IBP formula.

Answer: (C) ← Go Back to Q1

Q2.

Solution

Concept – Antiderivative of $\sin x$:

$$\int \sin x\, dx = -\cos x + C$$

Step 1 – Write the definite integral:

$$\int_0^{\pi} \sin x\, dx = \Big[-\cos x\Big]_0^{\pi}$$

Step 2 – Substitute the upper limit:

$$-\cos \pi = -(-1) = 1$$

Step 3 – Substitute the lower limit:

$$-\cos 0 = -(1) = -1$$

Step 4 – Subtract:

$$1 - (-1) = 2$$

Why other options are wrong:

- (A) 0: treating the integrand as odd over a symmetric interval (it is not).
- (B) 1: evaluating only the upper-limit term.
- (C) π: confusing with the length of the interval.

Answer: (D) ← Go Back to Q2

Q3.

Solution

Concept – Area under a curve above the x-axis:

$$A = \int_a^b y\, dx$$

Step 1 – Identify the limits and the function:

The region runs from $x = 0$ to $x = 3$ with $y = x^2$.

Step 2 – Set up the integral:

$$A = \int_0^3 x^2\,dx$$

Step 3 – Integrate:

$$= \left[\frac{x^3}{3}\right]_0^3$$

Step 4 – Evaluate:

$$= \frac{3^3}{3} - \frac{0^3}{3} = \frac{27}{3} - 0 = 9$$

Why other options are wrong:

- (B) 27: forgetting to divide by 3 after integrating.
- (C) $\frac{27}{2}$: integrating as if $y = x$ (using $x^2/2$).
- (D) 3: stopping at $x = 3$ without integrating.

Answer: (A) ← Go Back to Q3

Q4.

Solution

Concept – Standard circle equation:
$(x-h)^2 + (y-k)^2 = r^2$ for centre (h, k) and radius r.

Step 1 – Write the equation with centre $(1, 2)$, $r = 3$:

$$(x-1)^2 + (y-2)^2 = 9$$

Step 2 – Expand $(x-1)^2$:

$$x^2 - 2x + 1$$

Step 3 – Expand $(y-2)^2$:

$$y^2 - 4y + 4$$

Step 4 – Collect all terms:

$$x^2 - 2x + 1 + y^2 - 4y + 4 = 9$$

$$x^2 + y^2 - 2x - 4y + 5 = 9$$

Step 5 – Rearrange:

$$x^2 + y^2 - 2x - 4y - 4 = 0$$

Why other options are wrong:

- (A) has $+2x + 4y$: signs of both linear coefficients are wrong.
- (C) has $+4$: constant on the right side is not moved correctly.
- (D) has $+14$: adding 9 instead of subtracting it.

Answer: (B) ← Go Back to Q4

Q5.

Solution

Concept – Eccentricity of ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with $a > b$:

$$c^2 = a^2 - b^2, \qquad e = \frac{c}{a}$$

Step 1 – Read off a^2 and b^2:

$$a^2 = 16, \quad b^2 = 9$$

Step 2 – Compute c^2:

$$c^2 = 16 - 9 = 7$$

Step 3 – Compute c:

$$c = \sqrt{7}$$

Step 4 – Compute eccentricity:

$$e = \frac{c}{a} = \frac{\sqrt{7}}{4}$$

Why other options are wrong:

- (A) $\frac{3}{4}$: using b/a instead of c/a.
- (B) $\frac{\sqrt{7}}{3}$: dividing c by b instead of a.
- (D) $\frac{4}{\sqrt{7}}$: inverting the ratio c/a.

Answer: (C) ← Go Back to Q5

Q6.

Solution

Concept – Standard parabola $y^2 = 4ax$:
Focus is at $(a, 0)$ and the axis is the x-axis.

Step 1 – Match $y^2 = 8x$ to $y^2 = 4ax$:

$$4a = 8 \;\Rightarrow\; a = 2$$

Step 2 – State the focus:

$$\text{Focus} = (a, 0) = (2, 0)$$

Why other options are wrong:

- (B) $(0, 2)$: confusing this parabola with $x^2 = 4ay$ (vertical axis).
- (C) $(-2, 0)$: focus of the leftward parabola $y^2 = -8x$.
- (D) $(4, 0)$: using $a = 4$ from $4a = 8$ incorrectly (taking $a = 4a/2$ wrong).

Answer: (A) ← Go Back to Q6

Q7.

Solution

Concept – 2×2 determinant:

$$\det\begin{pmatrix} a & b \\ c & d \end{pmatrix} = ad - bc$$

Step 1 – Identify elements:

$$a = 2,\; b = 3,\; c = 1,\; d = 4$$

Step 2 – Compute:

$$\det(A) = 2 \times 4 - 3 \times 1 = 8 - 3 = 5$$

Why other options are wrong:

- (A) 11: adding instead of subtracting $(8 + 3)$.
- (B) -5: reversing the subtraction order $(bc - ad)$.
- (C) 8: taking only the main diagonal product.

Answer: (D) ← Go Back to Q7

Q8.

Solution

Concept – 2×2 matrix inverse:

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix}^{-1} = \frac{1}{ad-bc}\begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

Step 1 – Compute $\det(A)$:

$$\det(A) = 3 \times 1 - 1 \times 2 = 3 - 2 = 1$$

Step 2 – Form the adjugate (swap main diagonal, negate off-diagonal):

$$\text{adj}(A) = \begin{pmatrix} 1 & -1 \\ -2 & 3 \end{pmatrix}$$

Step 3 – Divide by $\det(A) = 1$:

$$A^{-1} = \begin{pmatrix} 1 & -1 \\ -2 & 3 \end{pmatrix}$$

Step 4 – Verify $A \cdot A^{-1} = I$:

$$\begin{pmatrix} 3 & 1 \\ 2 & 1 \end{pmatrix}\begin{pmatrix} 1 & -1 \\ -2 & 3 \end{pmatrix} = \begin{pmatrix} 3-2 & -3+3 \\ 2-2 & -2+3 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \checkmark$$

Why other options are wrong:

- (A): no sign change on off-diagonal elements.
- (C): main diagonal not swapped (kept 3 and 1 in place).
- (D): all signs reversed.

Answer: (B) ← Go Back to Q8

Q9.

Solution

Concept – Half-angle plus standard limit:

$$1 - \cos x = 2\sin^2\frac{x}{2}, \qquad \lim_{\theta\to 0}\frac{\sin\theta}{\theta} = 1$$

Step 1 – Rewrite the numerator:

$$\frac{1-\cos x}{x^2} = \frac{2\sin^2\frac{x}{2}}{x^2}$$

Step 2 – Write $x^2 = 4\left(\frac{x}{2}\right)^2$:

$$= \frac{2\sin^2\frac{x}{2}}{4\left(\frac{x}{2}\right)^2} = \frac{1}{2}\cdot\left(\frac{\sin\frac{x}{2}}{\frac{x}{2}}\right)^2$$

Step 3 – Take the limit as $x \to 0$ (so $\frac{x}{2} \to 0$):

$$= \frac{1}{2}\cdot(1)^2 = \frac{1}{2}$$

Why other options are wrong:

- (A) 0: stopping after noting the numerator $\to 0$, ignoring the rate.
- (B) 1: forgetting the factor $\frac{1}{2}$.
- (D) 2: using $1-\cos x \approx x^2$ instead of $\frac{x^2}{2}$.

Answer: (C) ← Go Back to Q9

Q10.

Solution

Concept – Product Rule:

$$\frac{d}{dx}(uv) = u'v + uv'$$

Step 1 – Set $u = x^3$, $v = e^x$:

$$u' = 3x^2, \qquad v' = e^x$$

Step 2 – Apply the product rule:

$$\frac{dy}{dx} = 3x^2e^x + x^3e^x$$

Step 3 – Factor out x^2e^x:

$$= x^2e^x(3+x) = x^2e^x(x+3)$$

Why other options are wrong:

- (A) $3x^2e^x$: differentiating only the x^3 factor.
- (B) x^3e^x: differentiating only the e^x factor.
- (C) $x^2e^x(3-x)$: sign error when collecting terms.

Answer: (D) ← Go Back to Q10

Q11.

Solution

Concept – Difference of squares from compound angles.

Step 1 – Expand $\cos(A+B)$:

$$\cos(A+B) = \cos A\cos B - \sin A\sin B$$

Step 2 – Expand $\cos(A-B)$:

$$\cos(A-B) = \cos A\cos B + \sin A\sin B$$

Step 3 – Multiply using $(p-q)(p+q) = p^2 - q^2$:

$$\cos(A+B)\cdot\cos(A-B) = (\cos A\cos B)^2 - (\sin A\sin B)^2$$

$$= \cos^2 A\cos^2 B - \sin^2 A\sin^2 B$$

Step 4 – Substitute $\cos^2 B = 1 - \sin^2 B$ and $\sin^2 A = 1 - \cos^2 A$:

$$= \cos^2 A(1-\sin^2 B) - (1-\cos^2 A)\sin^2 B$$

$$= \cos^2 A - \cos^2 A\sin^2 B - \sin^2 B + \cos^2 A\sin^2 B$$

$$= \cos^2 A - \sin^2 B$$

Why other options are wrong:

- (B) $\cos^2 A + \sin^2 B$: missing the sign change in the difference of squares.
- (C) $\sin^2 A - \cos^2 B$: this is the negative of the correct result.
- (D) $\cos^2 B - \sin^2 A$: a valid equivalent rearrangement only by coincidence; here it equals $\cos(A+B)\cos(A-B)$ written wrongly with A, B swapped.

Answer: (A) ← Go Back to Q11

Q12.

Solution

Concept – Cosine Rule:

$$a^2 = b^2 + c^2 - 2bc\cos A$$

Step 1 – Substitute $A = 60°$, $b = 5$, $c = 8$:

$$a^2 = 5^2 + 8^2 - 2(5)(8)\cos 60°$$

Step 2 – Compute each part:

$$a^2 = 25 + 64 - 80 \times \frac{1}{2}$$

Step 3 – Simplify:

$$a^2 = 89 - 40 = 49$$

Step 4 – Take positive square root:

$$a = \sqrt{49} = 7$$

Why other options are wrong:

- (A) $\sqrt{129}$: using $+2bc\cos A$ (wrong sign in the rule).
- (C) $\sqrt{89}$: omitting the $-2bc\cos A$ term entirely.
- (D) $\sqrt{39}$: using $80\cos 60° = 80$ wrongly, or $\cos 60° = \frac{5}{8}$.

Answer: (B) ← Go Back to Q12

Q13.

Solution

Concept – Classical probability:

$$P = \frac{\text{favourable outcomes}}{\text{total outcomes}}$$

Step 1 – Total outcomes for two dice:

$$6 \times 6 = 36$$

Step 2 – List the pairs summing to 7:

$$(1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1)$$

Step 3 – Count favourable outcomes:

$$6$$

Step 4 – Compute the probability:

$$P = \frac{6}{36} = \frac{1}{6}$$

Why other options are wrong:

- (A) $\frac{1}{12}$: counting only 3 ordered pairs.
- (B) $\frac{5}{36}$: this is $P(\text{sum} = 6)$ or $P(\text{sum} = 8)$, not 7.
- (D) $\frac{7}{36}$: miscounting one extra pair.

Answer: (C) ← Go Back to Q13

Q14.

Solution

Concept – Classical probability using combinations:

$$P = \frac{\text{favourable}}{\text{total}}$$

Step 1 – Total students: $5 + 4 = 9$**. Total ways to choose 3 from 9:**

$$\binom{9}{3} = \frac{9 \times 8 \times 7}{3 \times 2 \times 1} = 84$$

Step 2 – Ways to choose 3 boys from 5:

$$\binom{5}{3} = \frac{5 \times 4 \times 3}{3 \times 2 \times 1} = 10$$

Step 3 – Compute the probability:

$$P = \frac{10}{84} = \frac{5}{42}$$

Why other options are wrong:

- (A) $\frac{1}{14}$: this equals $\binom{4}{3}/\binom{9}{3} = 4/84$, the all-girls case.
- (B) $\frac{5}{14}$: not reduced correctly; over-counts favourable cases.
- (C) $\frac{10}{21}$: dividing 10 by 21 instead of 84.

Answer: (D) ← Go Back to Q14

Q15.

Solution

Concept – Dot product:

$$\mathbf{a} \cdot \mathbf{b} = a_1b_1 + a_2b_2 + a_3b_3$$

Step 1 – Write components:

$$\mathbf{a} = (3,\ 1,\ 2), \quad \mathbf{b} = (1,\ 2,\ -1)$$

Step 2 – Multiply component pairs:

$$3 \times 1 = 3$$

$$1 \times 2 = 2$$

$$2 \times (-1) = -2$$

Step 3 – Sum:

$$\mathbf{a} \cdot \mathbf{b} = 3 + 2 + (-2) = 3$$

Why other options are wrong:

- (A) 7: treating all products as positive: $3 + 2 + 2 = 7$.
- (B) -3: sign error giving the negative of the correct value.
- (C) 1: arithmetic slip such as $3 - 2 + 0$.

Answer: (D) ← Go Back to Q15

Q16.

Solution

Concept – Magnitude of cross product:

$$|\mathbf{a} \times \mathbf{b}| = |\mathbf{a}||\mathbf{b}| \sin\theta$$

Step 1 – State given values:

$$|\mathbf{a}| = 2, \quad |\mathbf{b}| = 5, \quad \theta = 30^\circ$$

Step 2 – Recall $\sin 30^\circ$:

$$\sin 30^\circ = \frac{1}{2}$$

Step 3 – Substitute:

$$|\mathbf{a} \times \mathbf{b}| = 2 \times 5 \times \frac{1}{2} = 10 \times \frac{1}{2} = 5$$

Why other options are wrong:

- (B) 10: using $\sin 30^\circ = 1$ or confusing cross with dot product.
- (C) $5\sqrt{3}$: using $\sin 60^\circ = \frac{\sqrt{3}}{2}$ instead of $\sin 30^\circ$.
- (D) $\frac{5}{2}$: an extra incorrect halving.

Answer: (A) ← Go Back to Q16

Q17.

Solution

Concept – Permutations of letters with a repeat:

$$\text{Number of arrangements} = \frac{n!}{p!}$$

where n is the total number of letters and $p!$ accounts for a repeated letter.

Step 1 – Count letters of APPLE: A, P, P, L, E**, so** $n = 5$**.**
The letter P repeats twice.

Step 2 – Compute $5!$:

$$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$$

Step 3 – Divide by $2!$ for the two identical P's:

$$\frac{120}{2!} = \frac{120}{2} = 60$$

Why other options are wrong:

- (A) 120: treating all five letters as distinct ($5!$).
- (C) 24: computing $4!$, dropping one letter.
- (D) 30: dividing 120 by 4 instead of 2.

Answer: (B) ← Go Back to Q17

Q18.

Solution

Concept – Sum of first n natural numbers:

$$S_n = \frac{n(n+1)}{2}$$

Step 1 – Set $n = 10$:

$$S_{10} = \frac{10 \times 11}{2}$$

Step 2 – Multiply the numerator:

$$= \frac{110}{2}$$

Step 3 – Divide:

$$= 55$$

Why other options are wrong:

- (A) 45: summing 1 to 9 only.
- (B) 100: using n^2 (10^2) instead of the correct formula.
- (D) 50: using $\frac{n^2}{2} = \frac{100}{2}$ incorrectly.

Answer: (C) ← Go Back to Q18

Q19.

Solution

Concept – Distance formula in 3D:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

Step 1 – Compute the coordinate differences:

$$x_2 - x_1 = 4 - 1 = 3$$

$$y_2 - y_1 = 6 - 2 = 4$$

$$z_2 - z_1 = 3 - 3 = 0$$

Step 2 – Square each difference:

$$3^2 = 9, \quad 4^2 = 16, \quad 0^2 = 0$$

Step 3 – Sum the squares:

$$9 + 16 + 0 = 25$$

Step 4 – Take the square root:

$$d = \sqrt{25} = 5$$

Why other options are wrong:

- (B) $\sqrt{34}$: squaring the wrong differences $(3^2 + 5^2)$.
- (C) 7: adding $3 + 4$ instead of using the formula.
- (D) $\sqrt{43}$: an arithmetic slip in summing the squares.

Answer: (A) ← Go Back to Q19

Q20.

Solution

Concept – Direct integration:
When $\frac{dy}{dx}$ depends only on x, integrate both sides with respect to x.
Step 1 – Separate the differentials:

$$dy = x\,dx$$

Step 2 – Integrate both sides:

$$\int dy = \int x\,dx$$

Step 3 – Carry out the integration:

$$y = \frac{x^2}{2} + C$$

Why other options are wrong:

- (A) $y = x + C$: general solution of $\dfrac{dy}{dx} = 1$, not x.
- (C) $y = x^2 + C$: forgetting the factor $\frac{1}{2}$ from $\int x\,dx$.
- (D) $y = Cx$: general solution of $\dfrac{dy}{dx} = \dfrac{y}{x}$.

Answer: (B) ← Go Back to Q20

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	D	3	A	4	B	5	C
6	A	7	D	8	B	9	C	10	D
11	A	12	B	13	C	14	D	15	D
16	A	17	B	18	C	19	A	20	B