

AP Calculus AB

Sample Question Paper - 2023

Country: US | Duration: 3h 15m | Max Marks: 5-point scale | Language: English

Negative Marking: No | Total Questions: 45 | QuizVerse AI Tutor

General Instructions:

1. This paper contains 45 questions across 1 section(s): Calculus.
2. Duration: 3h 15m. Maximum marks: 5-point scale.
3. Negative marking: No.
4. Read each question carefully before answering.

Section 1: Calculus (45 Questions)

Q1. The value of integral $\sin^4(x) dx$ from 0 to $\pi/2$ is:

- (A) $12\pi/32$
- (B) $8\pi/8$
- (C) $5\pi/4$
- (D) $8\pi/8$

Q2. If $\det(A) = 7$ and A is 3×3 , then $\det(2A) =$

- (A) 62
- (B) 16
- (C) 38
- (D) 64

Q3. If $\det(A) = 9$ and A is 3×3 , then $\det(2A) =$

- (A) 34
- (B) 3
- (C) 99
- (D) 72

Q4. The equation of tangent to $y = x^2$ at $x = 2$ is:

- (A) $y = 9x - 3$
- (B) $y = 7x - 9$
- (C) $y = 3x - 4$
- (D) $y = 3x - 19$

Q5. The distance between parallel lines $5x + 5y = 6$ and $3x + 3y = 14$ is:

- (A) 2.03
- (B) 2.17
- (C) 1.34
- (D) 1.40

Q6. The sum of first 49 terms of AP with $a = 2$, $d = 1$ is:

- (A) 4982
- (B) 1561
- (C) 1811
- (D) 3041

Q7. The probability of getting exactly 3 heads in 6 tosses of a fair coin is:

- (A) $32/64$
- (B) $33/64$
- (C) $15/256$
- (D) $21/32$

Q8. If $\det(A) = 4$ and A is 3×3 , then $\det(2A) =$

- (A) 94
- (B) 64
- (C) 73
- (D) 95

Q9. $\lim_{x \rightarrow 0} \sin(5x)/x =$

- (A) 6
- (B) 6
- (C) 7
- (D) 1

Q10. $\lim_{x \rightarrow 0} \sin(4x)/x =$

- (A) 5
- (B) 5
- (C) 4
- (D) 5

Q11. $\lim_{x \rightarrow 0} \sin(3x)/x =$

- (A) 1
- (B) 5
- (C) 3
- (D) 2

Q12. The value of integral $\sin^6(x) dx$ from 0 to $\pi/2$ is:

- (A) $13\pi/4$
- (B) $13\pi/4$
- (C) $6\pi/4$
- (D) $9\pi/32$

Q13. The sum of first 30 terms of AP with $a = 5$, $d = 4$ is:

- (A) 595
- (B) 4193
- (C) 418
- (D) 4044

Q14. The number of ways to arrange 4 distinct objects in a circle is:

- (A) 539
- (B) 4943
- (C) 4210
- (D) 604

Q15. The area under $y = x^2$ from $x = 0$ to $x = 4$ is:

- (A) 87.4
- (B) 96.3
- (C) 121.1
- (D) 20.4

Q16. The number of ways to arrange 5 distinct objects in a circle is:

- (A) 3023
- (B) 1700
- (C) 4168
- (D) 4397

Q17. The rank of the matrix $\begin{bmatrix} 1,2,3 \\ 4,5,6 \\ 7,10,12 \end{bmatrix}$ is:

- (A) 1
- (B) 2
- (C) 0
- (D) 3

Q18. The value of integral $\sin^2(x) dx$ from 0 to $\pi/2$ is:

- (A) $5\pi/32$
- (B) $15\pi/32$
- (C) $5\pi/8$
- (D) $4\pi/32$

Q19. The area under $y = x^4$ from $x = 0$ to $x = 2$ is:

- (A) 125.1
- (B) 192.3
- (C) 49.6
- (D) 132.1

Q20. The sum of first 45 terms of AP with $a = 4$, $d = 2$ is:

- (A) 3704
- (B) 3995
- (C) 2366
- (D) 1024

Q21. The distance between parallel lines $2x + 4y = 4$ and $5x + 4y = 15$ is:

- (A) 3.85
- (B) 3.63
- (C) 4.08
- (D) 4.83

Q22. The sum of first 41 terms of AP with $a = 3$, $d = 4$ is:

- (A) 1662
- (B) 1664
- (C) 4405
- (D) 4924

Q23. If $z = 3 + 2i$, then $|z| =$

- (A) 2.37
- (B) 4.66
- (C) 6.81
- (D) 1.88

Q24. Integral of $(x^4 + 8) dx$ from 0 to 1 equals:

- (A) 64
- (B) 18
- (C) 88
- (D) 40

Q25. Integral of $(x^2 + 8) dx$ from 0 to 4 equals:

- (A) 75
- (B) 51
- (C) 79
- (D) 66

Q26. The sum of first 44 terms of AP with $a = 4$, $d = 3$ is:

- (A) 1432
- (B) 4425
- (C) 3604
- (D) 3308

Q27. The eccentricity of the ellipse $x^2/14 + y^2/12 = 1$ is:

- (A) 0.60
- (B) 0.43
- (C) 0.60
- (D) 0.32

Q28. The mean of a binomial distribution with $n = 10$ and $p = 0.6$ is:

- (A) 27.0
- (B) 10.2
- (C) 13.0
- (D) 4.3

Q29. The value of integral $\sin^6(x) dx$ from 0 to $\pi/2$ is:

- (A) $7\pi/16$
- (B) $11\pi/16$
- (C) $10\pi/32$
- (D) $7\pi/32$

Q30. The number of ways to arrange 7 distinct objects in a circle is:

- (A) 2306
- (B) 807
- (C) 2042
- (D) 358

Q31. The area under $y = x^4$ from $x = 0$ to $x = 3$ is:

- (A) 59.6
- (B) 9.3
- (C) 112.4
- (D) 79.0

Q32. The equation of tangent to $y = x^2$ at $x = 3$ is:

- (A) $y = 2x - 4$
- (B) $y = 9x - 4$
- (C) $y = 5x - 19$
- (D) $y = 4x - 11$

Q33. If $z = 1 + 1i$, then $|z| =$

- (A) 4.88
- (B) 9.32
- (C) 2.09
- (D) 3.66

Q34. The eccentricity of the ellipse $x^2/6 + y^2/9 = 1$ is:

- (A) 0.49
- (B) 0.49
- (C) 0.77
- (D) 0.40

Q35. The rank of the matrix $[[1,2,3],[4,5,6],[8,11,10]]$ is:

- (A) 3
- (B) 2
- (C) 0
- (D) 1

Q36. Integral of $(x^4 + 6) dx$ from 0 to 3 equals:

- (A) 90
- (B) 54
- (C) 34
- (D) 88

Q37. The rank of the matrix $[[1,2,3],[4,5,6],[7,11,12]]$ is:

- (A) 0
- (B) 2
- (C) 1
- (D) 3

Q38. The eccentricity of the ellipse $x^2/18 + y^2/16 = 1$ is:

- (A) 0.61
- (B) 0.82
- (C) 0.78
- (D) 0.68

Q39. The equation of tangent to $y = x^3$ at $x = 2$ is:

- (A) $y = 5x - 12$
- (B) $y = 6x - 7$
- (C) $y = 8x - 4$
- (D) $y = 2x - 13$

Q40. The area under $y = x^2$ from $x = 0$ to $x = 5$ is:

- (A) 152.6
- (B) 65.9
- (C) 94.0
- (D) 37.6

Q41. The sum of first 26 terms of AP with $a = 1$, $d = 3$ is:

- (A) 3587
- (B) 3159
- (C) 1078
- (D) 3315

Q42. If $\det(A) = 6$ and A is 3×3 , then $\det(2A) =$

- (A) 76
- (B) 93
- (C) 92
- (D) 47

Q43. The mean of a binomial distribution with $n = 11$ and $p = 0.6$ is:

- (A) 22.2
- (B) 4.1
- (C) 35.1
- (D) 18.4

Q44. If $\det(A) = 6$ and A is 3×3 , then $\det(2A) =$

- (A) 77
- (B) 16
- (C) 14
- (D) 74

Q45. The derivative of $x^5 \sin(x)$ at $x = \pi$ is:

- (A) 4.53
- (B) -1.72
- (C) -2.13
- (D) -19.42

Answer Key

Q1: (C)	Q2: (C)	Q3: (A)	Q4: (A)	Q5: (D)
Q6: (B)	Q7: (D)	Q8: (A)	Q9: (A)	Q10: (C)
Q11: (C)	Q12: (A)	Q13: (D)	Q14: (A)	Q15: (A)
Q16: (A)	Q17: (B)	Q18: (A)	Q19: (C)	Q20: (A)
Q21: (C)	Q22: (D)	Q23: (D)	Q24: (C)	Q25: (B)
Q26: (C)	Q27: (B)	Q28: (B)	Q29: (C)	Q30: (B)
Q31: (B)	Q32: (B)	Q33: (C)	Q34: (A)	Q35: (B)
Q36: (C)	Q37: (B)	Q38: (D)	Q39: (B)	Q40: (B)
Q41: (C)	Q42: (D)	Q43: (A)	Q44: (B)	Q45: (D)

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