

# AP Calculus AB

## Sample Question Paper - 2026

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 rank of the matrix  $\begin{bmatrix} 1,2,3 \\ 4,5,6 \\ 9,8,12 \end{bmatrix}$  is:**

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

**Q2. The sum of first 44 terms of AP with  $a = 4$ ,  $d = 3$  is:**

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

**Q3. The mean of a binomial distribution with  $n = 14$  and  $p = 0.3$  is:**

- (A) 26.0
- (B) 8.9
- (C) 32.5
- (D) 32.7

**Q4. The sum of first 30 terms of AP with  $a = 5$ ,  $d = 4$  is:**

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

**Q5. The distance between parallel lines  $4x + 5y = 7$  and  $5x + 5y = 19$  is:**

- (A) 2.89
- (B) 1.20
- (C) 2.30
- (D) 2.72

**Q6. The number of ways to arrange 4 distinct objects in a circle is:**

- (A) 1092
- (B) 1877
- (C) 1111
- (D) 4731

**Q7. The derivative of  $x^5 \sin(x)$  at  $x = \pi$  is:**

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

**Q8. The area under  $y = x^4$  from  $x = 0$  to  $x = 2$  is:**

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

**Q9. The equation of tangent to  $y = x^2$  at  $x = 1$  is:**

- (A)  $y = 8x - 6$
- (B)  $y = 3x - 12$
- (C)  $y = 5x - 9$
- (D)  $y = 11x - 3$

**Q10. If  $z = 3 + 2i$ , then  $|z| =$**

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

**Q11. The value of integral  $\sin^4(x) dx$  from 0 to  $\pi/2$  is:**

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

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

- (A)  $5\pi/8$
- (B)  $6\pi/32$
- (C)  $10\pi/4$
- (D)  $11\pi/16$

**Q13. The area under  $y = x^4$  from  $x = 0$  to  $x = 3$  is:**

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

**Q14. The value of integral  $\sin^2(x)$  dx from 0 to  $\pi/2$  is:**

- (A)  $\pi/8$
- (B)  $15\pi/16$
- (C)  $3\pi/32$
- (D)  $11\pi/8$

**Q15. The equation of tangent to  $y = x^4$  at  $x = 1$  is:**

- (A)  $y = 4x - 4$
- (B)  $y = 10x - 15$
- (C)  $y = 12x - 9$
- (D)  $y = 10x - 4$

**Q16. The sum of first 41 terms of AP with  $a = 3$ ,  $d = 4$  is:**

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

**Q17.  $\lim_{x \rightarrow 0} \sin(3x)/x =$**

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

**Q18. The equation of tangent to  $y = x^4$  at  $x = 1$  is:**

- (A)  $y = 11x - 17$
- (B)  $y = 5x - 20$
- (C)  $y = 12x - 3$
- (D)  $y = 4x - 14$

**Q19. The equation of tangent to  $y = x^2$  at  $x = 2$  is:**

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

**Q20. The distance between parallel lines  $2x + 3y = 5$  and  $3x + 4y = 16$  is:**

- (A) 0.77
- (B) 0.60
- (C) 1.72
- (D) 3.07

**Q21. If  $\det(A) = 9$  and  $A$  is  $3 \times 3$ , then  $\det(2A) =$**

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

**Q22. The rank of the matrix  $\begin{bmatrix} 1,2,3 \\ 4,5,6 \\ 7,11,12 \end{bmatrix}$  is:**

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

**Q23. Integral of  $(x^3 + 8) dx$  from 0 to 1 equals:**

- (A) 84
- (B) 32
- (C) 6
- (D) 5

**Q24. The probability of getting exactly 3 heads in 5 tosses of a fair coin is:**

- (A)  $35/64$
- (B)  $20/64$
- (C)  $47/32$
- (D)  $13/256$

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

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

**Q26. If  $z = 1 + 1i$ , then  $|z| =$**

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

**Q27. The rank of the matrix  $\begin{bmatrix} 1,2,3 \\ 4,5,6 \\ 9,11,9 \end{bmatrix}$  is:**

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

**Q28. The equation of tangent to  $y = x^2$  at  $x = 3$  is:**

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

**Q29. The area under  $y = x^2$  from  $x = 0$  to  $x = 4$  is:**

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

**Q30. The eccentricity of the ellipse  $x^2/16 + y^2/12 = 1$  is:**

- (A) 0.81
- (B) 0.82
- (C) 0.40
- (D) 0.45

**Q31. The distance between parallel lines  $5x + 5y = 6$  and  $3x + 3y = 14$  is:**

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

**Q32. The distance between parallel lines  $2x + 4y = 6$  and  $5x + 3y = 13$  is:**

- (A) 3.80
- (B) 4.49
- (C) 2.39
- (D) 4.23

**Q33. The eccentricity of the ellipse  $x^2/18 + y^2/16 = 1$  is:**

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

**Q34. The derivative of  $x^2 \sin(x)$  at  $x = \pi$  is:**

- (A) -15.84
- (B) -10.64
- (C) 6.70
- (D) 6.14

**Q35. The probability of getting exactly 3 heads in 6 tosses of a fair coin is:**

- (A)  $27/64$
- (B)  $42/32$
- (C)  $31/32$
- (D)  $11/128$

**Q36. The mean of a binomial distribution with  $n = 10$  and  $p = 0.6$  is:**

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

**Q37. If  $z = 4 + 2i$ , then  $|z| =$**

- (A) 3.04
- (B) 5.05
- (C) 6.05
- (D) 1.38

**Q38. 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

**Q39. If  $\det(A) = 6$  and  $A$  is  $3 \times 3$ , then  $\det(2A) =$**

- (A) 5
- (B) 45
- (C) 10
- (D) 90

**Q40. The value of integral  $\sin^2(x) dx$  from 0 to  $\pi/2$  is:**

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

**Q41. The number of ways to arrange 5 distinct objects in a circle is:**

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

**Q42. The rank of the matrix  $[[1,2,3],[4,5,6],[9,10,12]]$  is:**

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

**Q43. If  $\det(A) = 6$  and  $A$  is  $3 \times 3$ , then  $\det(2A) =$**

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

**Q44. The distance between parallel lines  $5x + 3y = 5$  and  $4x + 4y = 18$  is:**

- (A) 1.82
- (B) 4.57
- (C) 2.24
- (D) 2.71

**Q45. The area under  $y = x^2$  from  $x = 0$  to  $x = 5$  is:**

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

# Answer Key

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

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