1. For a demand function p, if ∫ = k ∫ then k is equal to
dp dx

(a)

(b) – p x

(c)

(d)

–1 1

2. e +c 2 e +c 2 e +c 2 e x+c
2x 2
■(ae) 2x +2x dx (b) (c) (d)
2 x
2x 2 2x 2 2 x e

(b)

(c)

(d)

2 x

2x 2 2x 2 2 x e

3. The rank of m * n matrix whose elements are unity is

(a) 0

(b) 1

(c) m

(d) n

4. The rank of the unit matrix of order n is

(a) n –1

(b) n

(c) n + 1

(d) n2

5. sinx is 2sinx cosx 2cosx
sin5x–sinx
■

(a) cos3x dx+ c

(b) + c

(c) + c

(d) + c

1

6. Cramer’s rule is applicable only to get an unique solution when

(a) ≠ 0

(b) ≠ 0

(c) Delta ≠ 0

(d) ≠ 0

∆z ∆x ∆y

7. If MR and MC denote the marginal revenue and marginal cost and MR – MC = $36x - 3x^2 - 81$, then
the maximum profit at x is equal to

(a) 3
(b) 6
(c) 9
(d) 5

8. ∫ –cos,2xx> 0 is –cos2x –4cos2x –4cos2x
logx

(a)x dx
(b)
(c)
(d)
1 2 1 2 2 2
2 2

9. If the marginal revenue function of a firm is MR= , then revenue is
–x
10

(a) –10
(b) 1 –
(c)1e0
(d) + 10
–x –x –x –x
10 10 10 10

10. When = 2 and = 12 the producer's surplus for the supply function = $2x^2 + 4$ is

(a) 31/5 x0units p0
(b) 31/2 units
(c) 32/3 units ps
(d) 30/7 units

11. The value of is
pi
2pi

(a) 0 ■–2cosxdx
(b) 2
(c) 1
(d) 4

12. Area bounded by y = x between the lines y = 1, y = 2 with y = axis is

(a) 1/2 sq.units

(b) 5/2 sq.units

(c) 3/2 sq.units

(d) 1 sq.unit

13. ∫ is

1

3

(ax)dx (b) (c) (d)

–3 –1 –1 –2

(b)

(c)

(d)

–3 –1 –1 –2

14. Using the factorial representation of the gamma function, which of the following is the solution for the

2

gamma function Gamma(n) when n = 8

(a) 5040

(b) 5400

(c) 4500

(d) 5540

15. log xis–3 –log x+1 +c log x–3 +log x+1 +c

3

2x

4

■4+x dx

(a)

(b)

(c)

(d)

3

4 1 4 1 4 2x

4

16. 1+e x+isc 2 1+e +c 1+e +c e 1+e +c

x

■

(a)e dx

(b)

(c)

(d)

x x 1 x 1

17. 2(logx)is+c –2(logx) x +c x +c

x

e

■

(a)1+e xdx

(b)

(c)

(d)

x

e x x x x

18. In a transition probability matrix, all the entries are greater than or equal to

(a) 2

(b) 1

(c) 0

(d) 3

19. The profi2t of a function p(x) is m2aximum when 2

(a) MC – MR = 0

(b) MC=0

(c) MR=0

(d) MC+MR=0

20. The area bounded by the parabola $y^2 = 4x$ bounded by its leatus rectum is e

(a) 16/3 sq.units

(b) 8/3 sq.units

(c) 72/3 sq.units

(d) 1/3 sq.units

21. 2 is 2 log2+c 2 +c

sin2x

■(a2)sinxdx+ c (b) + c (c) + c (d) + c

1 1

(b) + c

(c) + c

(d) + c

1 1

22. x +3x+2is+c x +3x+2+c log x +3x+2 +c 3(x +3x+2) +c

1

■(a0)(12x+1)dx (b) 2 (c) 3 (d) 4

(b) 2

(c) 3

(d) 4

23. If T = is a transition probability matrix, then the value of x is

A 0.7 0.3

(a) 0.2

(b) 0.3

(c) 0.4

(d) 0.7

B 0.6 x

24. log 4+isx +c 2log 4+x +c 4log 4+x +c log 4+x +c

dx

■

(a)x 2 −36

(b)

(c)

(d)

2 2 2 2 2

25. is

4 1

■(a0) 20x/+3 x dx (b) 21/3 (c) 28/3 (d) 1/3

(b) 21/3

(c) 28/3

(d) 1/3

26. Area bounded by y = |x| between the limits 0 and 2 is

(a) 1sq.units

(b) 3 sq.units

(c) 2 sq.units

(d) 4 sq.units

27. If ρ (A) = r then which of the following is correct?

(A) = r then which of the following is correct?

(a) all the minors of order r which does not vanish

(b) A has at least one minor of order r which does not vanish

(c) A has at least one

(d) all

28. Areηa d bounded by y = betηw d een the limits 0 to 1 is ηd ηd

x

(a)

(b)

(c)

(d)

29. The producer’s surplus when the supply function for a commodity is P = 3 + x and = 3 is

(a) 5/2

(b) 9/2

(c) 3/2

(d)

x

70/2

30. is

infinity –2x

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(a) 0

(b) 1

(c) 2

(d) ½

31. is

1

4 2

■(a0) 1x/(112–x) dx (b) –7 /12 (c) 7 /12 (d) –1 /12

(b) –7 /12

(c) 7 /12

(d) –1 /12

32. For the system of equations x + 2 y + 3z = 1 , 2x + y + 3z = 2 , 5x + 5y + 9z = 4

(a) there is only one solution

(b) there exists infinitely many solutions

(c) there is no solution

(d) None of these

33. e x +isc xe +c 2x e +c 2 +c

x

e

x

■(ae)+1 dx (b) (c) (d)

x x

e e +1 x x

x x

(b)

(c)

(d)

x x

e e +1 x x

x x

34. The demand and supply functions are given by D (x)= 16 – x^2 and S (x) = $2x^2$ + 4 are under perfect
competition, then the equilibrium price x is

(a) 2

(b) 3

(c) 4

(d) 5

35. pi is 2 pi 2
infinity 4 –x
■(a0)x12e dx (b) 4 (c) 4! (d) 64
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(b) 4

(c) 4!

(d) 64

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36. The rank of the matrix is
1 1 1
1 2 3

(a) 0

(b) 1

(c) 2

(d) 3

1 4 9

37. If and , is
1 1 1 2 2 1 2

(a)■04fa

(b)a0 ■0 x f x dx= a

(c)■02aa²–x f x dx

(d) 1

38. Which of the following is not an elementary transformation?

(a) Ri $\leftrightarrow$ Rj

(b) Ri $\rightarrow$ 2 Ri + 2Cj

(c) Ri $\rightarrow$ 2 Ri – 4Rj

(d) Ci $\rightarrow$ Ci + 5Cj

39. Gamma(1) is

(a) 0

(b) 1

(c) n

(d) n!

40. If MR aend MC denotes the mareginal revenue and marg1in–ael cost functions, theen the profit functions is

(a) P = ∫

(b) P = ∫

(c) P = ∫

(d) P = ∫

41. The system of linear equations x + y + z = 2 , 2x + y – z = 3 , 3x + 2 y + k = 4 has unique solution, if k
is not equal to

(a) 4

(b) 0

(c) –4

(d) 1

42. Area bounded by the curve y = between the limits 1 and 2 is
1

(a) log2 sq.units

(b) log5xsq.units

(c) log3 sq.units

(d) log 4 sq.units

43. If |A| ≠ 0, then A is

(a) non- singular matrix

(b) singular matrix

(c) zero matrix

(d) none of these

44. When = 5 and = 3 the consumer's surplus for the demand function = 28 – x^2 is

(a) 250 x u0nits p0

(b) 250/3 units

(c) 251/2 units pd

(d) 251/3 units

45. is
4dx
(■a2) lxog 4 (b) 0 (c) log 2 (d) log 8

(b) 0

(c) log 2

(d) log 8

46. If the rank of the matrix is 2. Then λ is

λ –1 0

0 λ –1

(a) 1

(b) 2

(c) 3

(d) only real number

–1 0 λ

47. is

1 3 x 4

■(a–1)x1e dx (b) 2 (c) 0 (d)

1 3 x 4 x 4

(b) 2

(c) 0

(d)

1 3 x 4 x 4

48. log e +1 +c is log e +c log e +c log e +1 +c

9 1

■

(a)x–3–x+1 dx

(b)

(c) 9

(d) 9

log x–3 –log x+1 +c log x–3 +log x+1 +c

49. If A = , then ρ(A) is

2 0

(A) is

2 0

(a) 0

(b) 1

(c) 2

(d) n

0 8

50. If T = is a transition probability matrix, then at equilibrium A is equal to

A 0.4 0.6

(a) ¼

(b) 1/5

(c) 1/6

(d) 1/8

B 0.2 0.8

51. The rank of the diagonal matrix

–

(a) 0

(b) 2

(c) 3

(d) 5

52. The value of is

3 3

(a) 1 ■2 f 5–x dx

(c) –1

(d) 5

53. | ∆1|,∆=13 |adjA| = 243 then the∆1v,a∆l1ue n is ∆2,∆3 ∆2 , ∆3

(a

A

)n4*n (b) 5 (c) 6 (d) 7

(b) 5

(c) 6

(d) 7

54. If f(x) is a continuous function■a0nxdea d<xc < b , then is e

c b

(a)

(b)

(d) 0

b c c b b

■a f

55. Area bounded by the curve y = between the limits 0 ≤ x ≤ infinity is

–2x

(a) 1 sq.units

(b) ½ sq.unit

(c) 5 sq.units

(d) 2 sq.units

e

56. The marginal revenue and marginal cost functions of a company are MR = 30 – 6x and MC = –24 + 3x

where x is the product, then the profit function is

(a) $9x^2 + 54x$

(b) $9x^2 – 54x$

(c) 54x –

(d) 54x – + k

2 2

9x 9x

57. If the marginal revenue MR = 35 + 7x – 3x² , then the average revenue AR is

(a) 35x + – x³

(b) 35 + – x²

(c) 35 + + x²

(d) 35 + 7x + x²

2

7x 7x 7x

58. For the demand function p(x), the elasticity of demand with respect to price is unity then

(a) revenue is constant

(b) cost function is constant

(c) profit is constant

(d) none of these

59. If ρ (A) ≠ ρ (A, B) , then the system is

(a) Consistent and has infinitely many solutions

(b) Consistent and has a unique solution

(c) inconsistent

(d) consistent

60. If then (x, y) is

a1 b1 a2 b2 a1 b1 b1 c1 c1 a1

(a) x + y =c1 , x + y =c2 ,Δ1

(d)

Δ2 Δ3 Δ3 Δ2 Δ1 Δ1 –Δ1 –Δ1

61. The 3 de x mand and supply f 3 un x ction of a commodity are P(3xx2) = (x – 5)² and S(x) = x² + x3x+2 3 then the

equilibrium quantity is

(a) 5

x

(c) 3

(d) 19

62. If ρ(A) = ρ(A, B) then the system is

(A) = ρ

(a) Consistent and has infinitely many solutions

(b) Consistent and has a unique solution

(c) Consistent

(d) inconsistent

63. The demand function for the marginal function MR = 100 – $9x^2$ is

(a) 100 – $3x^2$

(b)100x – $3x^2$

(c)100x – $9x^2$

(d)100 + $9x^2$

64. The demand and supply function of a commodity are D(x)= 25 – 2x and S(x) = then the equilibrium

10+x

price P0 is 4

(a) 5

(b) 2

(c) 3

(d) 10

65. is

pi

3

■(a0)talongx2dx (b) 0 (c) log (d) 2 log 2

(b) 0

(c) log

(d) 2 log 2

66. Gamma(n) is

(a)

(b) n!

(c) nGamma

(d)

67. If A=(1 2 3), then the rank of is

T

(a) 0

(b) 2

(c) 3

(d) 1

AA

68. Gamma ■0 e x dx ■0 e x dx ■0 e x dx ■0 e x dx

3

(a)2

(b)

(c) 2

(d)

pi 3

69. If the marginal revenue of a firm is constant, then the demand function is

(a) MR

(b) MC

(c) C

(d) AC

70. If the number of variables in a non- homogeneous system AX = B is n, then the system possesses a
unique solution only when

(a) ρ

(b) ρ

(c) ρ

(d) none of these

71. The system of equations 4x + 6 y = 5 , 6x + 9 y = 7 has

(a) a unique solution

(b) no solution

(c) infinitely many solutions

(d) none of these

72. The marginal cost function is MC = 100sqrtx. find AC given that TC =0 when the out put is zero is XII BUSINESSMATHEMATICSANDSTATISTICS -

(a)

(b)

(c)

(d)

1 3

200 200 200 200

2 2

3 1

73. The given demand and supply function are given by D (x)2= 20 – 5x and S (x) = 4x +2 8 if they are under
perfect competition then the equilibrium demand is

(a) 40

(b) 41/2

(c) 40/3

(d) 41/5

74. Rank of a null matrix is

(a) 0

(b) –1

(c) infinity

(d) 1

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75. x –36+isc log x+ x –36 +c log x– x –36 +c log x + x –36 +c

2x+3

■ x 2 +3x+2dx

(a)

(b) 2

(c)

(d)

3

2 2 2 2 2 2

76. If n > 0, then Gamma(n) is

(a)

(b)

(c)

(d)

1 –x n–1 1 –x n infinity x –n infinity –x n–1

77. Area bounded by the curve y = x (4 – x) between the limits 0 and 4 with x – axis is

(a) 30/3 sq.units

(b) 31/2 sq.units

(c) 32/3 sq.units

(d) 15/2 sq.units

78. If ρ(A) = ρ(A, B)= the number of unknowns, then the system is

(A) = ρ

(a) Consistent and has infinitely many solutions

(b) Consistent and has a unique solution

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(c) inconsistent

(d) consistent

79. If A = then the rank of is

1

T

2 AA

(a) 0

(b) 1

(c) 2

(d) 3

3

80. ∫ x 2 +isc 2x 2 +c 3x 2 +c x 2 +c

x

(a2) dxlog 2 + c (b) + c (c) (d)

x

x x 2 log2

x

(b) + c

(c)

(d)

x

x x 2 log2

x