1. If the marginal revenue MR = $35 + 7x – 3x^2$, then the average revenue AR is

(a) $35x + – x^3$

(b) $35 + – x^2$

(c) $35 + + x^2$

(d) $35 + 7x + x^2$

2

7x 7x 7x

2. If and , is

1 1 1 2 2 1 2

(a)■04fa

(b)a0 ■0 x f x dx= a

(c)■02aa^2–x f x dx

(d) 1

3. 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

4. 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

5. The value of is

3 3

(a) 1 ■2 f 5–x dx

(c) –1

(d) 5

6. The 3 de x mand and supply f 3 un x ction of a commodity are P(3xx2) = $(x – 5)^2$ and S(x) = x^2 +

x3x+2 3 then the

equilibrium quantity is

(a) 5

x

(c) 3

(d) 19

7. 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

8. The value of is

pi

2pi

(a) 0 ■–2cosxdx

(b) 2

(c) 1

(d) 4

9. is

infinity –2x

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(a) 0

(b) 1

(c) 2

(d) ½

10. 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

11. 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

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

(a) 2

(b) 1

(c) 0

(d) 3

13. 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

14. If A = , then ρ(A) is

2 0

(A) is

2 0

(a) 0

(b) 1

(c) 2

(d) n

0 8

15. ∫ is

1

3

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

–3 –1 –1 –2

(b)

(c)

(d)

–3 –1 –1 –2

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. If A = then the rank of is

1

T

2 AA

(a) 0

(b) 1

(c) 2

(d) 3

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

(a)

(b) – p x

(c)

(d)

–1 1

19. 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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20. 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

21. 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

22. The marginal cost function is MC = 100sqrtx. find AC given that TC =0 when the out put is zero is
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(a)

(b)

(c)

(d)

1 3

200 200 200 200

2 2

3 1

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

T

(a) 0

(b) 2

(c) 3

(d) 1

AA

24. 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

25. 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

26. 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

27. 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

28. 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

29. 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

30. Cramer's rule is applicable only to get an unique solution when

(a) ≠ 0

(b) ≠ 0

(c) Delta ≠ 0

(d) ≠ 0

Δz Δx Δy

31. | Δ1|,Δ=13 |adjA| = 243 then theΔ1v,aΔl1ue n is Δ2,Δ3 Δ2 , Δ3

(a

A

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

(b) 5

(c) 6

(d) 7

32. 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

33. 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

34. 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

35. Rank of a null matrix is
(a) 0
(b) –1
(c) infinity
(d) 1
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36. is
4dx
(■a2) lxog 4 (b) 0 (c) log 2 (d) log 8
(b) 0
(c) log 2
(d) log 8

37. 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

38. 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

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

(a) 0

(b) 1

(c) m

(d) n

40. 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

41. 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 = ∫

42. The rank of the matrix is

1 1 1

1 2 3

(a) 0

(b) 1

(c) 2

(d) 3

1 4 9

43. 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

44. 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

45. 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

46. 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

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

(a) MR

(b) MC

(c) C

(d) AC

48. 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

49. 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

50. Gamma(1) is

(a) 0

(b) 1

(c) n

(d) n!

51. 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

52. 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

53. 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

54. If then (x, y) is

a1 b1 a2 b2 a1 b1 b1 c1 c1 a1

(a) x + y =c1 , x + y =c2 ,∆1

(d)

∆2 ∆3 ∆3 ∆2 ∆1 ∆1 –∆1 –∆1

55. is

pi

3

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

(b) 0

(c) log

(d) 2 log 2

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

logx

(a)x dx

(b)

(c)

(d)

1 2 1 2 2 2

2 2

57. 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

58. The rank of the diagonal matrix

–

(a) 0

(b) 2

(c) 3

(d) 5

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

(a) n –1

(b) n

(c) n + 1

(d) n2

60. 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

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

(a) $R_i \leftrightarrow R_j$

(b) $R_i \rightarrow 2R_i + 2C_j$

(c) $R_i \rightarrow 2R_i - 4R_j$

(d) $C_i \rightarrow C_i + 5C_j$

62. Gamma(n) is

(a)

(b) n!

(c) nGamma

(d)

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. 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

65. 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

66. 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

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

(a) cos3x dx+ c

(b) + c

(c) + c

(d) + c

1

68. 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

69. 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

70. 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

71. 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

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

x

- (a)
- (b)
- (c)
- (d)

73. 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

74. ∫ 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

75. 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

76. 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

77. 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

78. 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

79. 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

80. If |A| ≠ 0, then A is

(a) non- singular matrix

(b) singular matrix

(c) zero matrix

(d) none of these