MCA TEST SERIES-6

Mathematics

1. The multiplication inverse of the matrix

$$A=\begin{bmatrix}\cos\theta & -\sin\theta & 0\\ \sin\theta & \cos\theta & 0\\ 0 & 0 & 1\end{bmatrix} \text{ is}$$

(a) $\begin{bmatrix}-\cos\theta & \sin\theta & 0\\ -\sin\theta & -\cos\theta & 0\\ 0 & 0 & 1\end{bmatrix}$ (b) $\begin{bmatrix}\cos\theta & \sin\theta & 0\\ -\sin\theta & \cos\theta & 0\\ 0 & 0 & 1\end{bmatrix}$

(c) $\begin{bmatrix}-\cos\theta & -\sin\theta & 0\\ \sin\theta & -\cos\theta & 0\\ 0 & 0 & 1\end{bmatrix}$ (d) $\begin{bmatrix}\cos\theta & \sin\theta & 0\\ \sin\theta & -\cos\theta & 0\\ 0 & 0 & 1\end{bmatrix}$

2. The equations

$$x+2y+3z=1,$$
$$x-y+4z=0,$$
$$2x+y+7z=1$$

have

(a) only one solution (b) only two solutions
(c) no solutions (d) infinitely many solutions

3. For positive numbers x, y and z, the value of the determinant

$$\begin{vmatrix}1 & \log_x y & \log_x z\\ \log_y x & 1 & \log_y z\\ -\log_z x & \log_z y & 1\end{vmatrix} \text{ is}$$

(a) 0 (b) 1 (c) -1 (d) $\log 3$

4. The centre of a circle passing through the points $(0, 0)$, $(1, 0)$ and touching the circle $x^2+y^2=9$ is

(a) $\left(\frac{3}{2}, \frac{1}{2}\right)$ (b) $\left(\frac{1}{2}, -\sqrt{2}\right)$

(c) $\left(\frac{1}{2}, \frac{3}{2}\right)$ (d) $\left(\frac{1}{2}, \frac{1}{2}\right)$

5. Two perpendicular tangents to the circle $x^2+y^2=a^2$ meet at a point P. Then, the locus of point P has the equation

(a) $x^2+y^2=a^2$ (b) $x^2+y^2=2a^2$
(c) $x^2+y^2=3a^2$ (d) $x^2+y^2=4a^2$

6. One of the limit points of the coaxial system of a circles containing $x^2+y^2-6x-6y+4=0$ and $x^2+y^2-2x-4y+3=0$ is

(a) $(1, -1)$ (b) $(-1, 1)$ (c) $(-1, 2)$ (d) $(1, -2)$

7. The locus of the centre of circle which cuts the circles $x^2+y^2+2g_ix+2f_iy+c_i=0$, $(i=1,2)$ orthogonally, is

(a) an ellipse
(b) another circle
(c) the radical axis of given circles
(d) a conic

8. The locus of the centre of a circle of radius 2 units, which rolls on the outside of the circle $x^2+y^2+3x-6y-9=0$, is

(a) $x^2+y^2+3x-6y+5=0$
(b) $x^2+y^2+6x-3y+24=0$
(c) $x^2+y^2+3x-6y-31=0$
(d) $x^2+y^2+3x+6y+41=0$

9. The mid-point of the chord intercepted on the line $4x-3y+4=0$ by the parabola $y^2=8x$ is

(a) $(5, 3)$ (b) $\left(5, \frac{3}{2}\right)$

(c) $\left(\frac{5}{2}, 3\right)$ (d) $\left(\frac{5}{4}, 3\right)$

10. The polar of a point with respect to $y^2=4ax$ touches $x^2=4by$, then the locus of this point is

(a) a circle (b) a parabola
(c) an ellipse (d) a rectangular hyperbola

11. The line $x+y=6$ is a normal to the parabola $y^2=8x$ at the point

(a) $(18, -12)$ (b) $(4, 2)$
(c) $(2, 4)$ (d) $(3, 3)$

12. The length of the major axis of an ellipse is three times the length of its minor axis, its eccentricity is

(a) $\frac{2\sqrt{2}}{3}$ (b) $\frac{1}{3}$

(c) $\frac{1}{\sqrt{3}}$ (d) $\frac{1}{\sqrt{2}}$

13. If CP and CD are the semi-conjugate diameters of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, then CP^2+CD^2 is equal to

(a) $a+b$ (b) a^2+b^2
(c) a^2-b^2 (d) $\sqrt{a^2+b^2}$

14. The ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ and the straight line $y=mx+c$ intersect in real points, only if

(a) $a^2m^2 < c^2 - b^2$ (b) $a^2m^2 > c^2 - b^2$

(c) $a^2m^2 \geq c^2 - b^2$ (d) $c \geq b$

15. The curve represented by $x=a(\cosh\theta+\sinh\theta)$, $y=b(\cosh\theta-\sinh\theta)$ is

(a) a hyperbola (b) an ellipse

(c) a parabola (d) a circle

16. The foci of the ellipse $\frac{x^2}{16}+\frac{y^2}{b^2}=1 (b<4)$ and the hyperbola $\frac{x^2}{144}-\frac{y^2}{81}=\frac{1}{25}$ coincide, then the value of b^2 is

(a) 1 (b) 5

(c) 7 (d) 9

17. The equation of a tangent parallel to $y=x$ drawn to $\frac{x^2}{3}-\frac{y^2}{2}=1$ is

(a) $x-y-1=0$ (b) $x-y+2=0$

(c) $x-y-1=0$ (d) $x+y+2=0$

18. The equation of ellipse whose one focus is at $(4,0)$ and whose eccentricity is $\frac{4}{5}$, is

(a) $\frac{x^2}{9}+\frac{y^2}{25}=1$ (b) $\frac{x^2}{25}+\frac{y^2}{9}=1$

(c) $\frac{x^2}{25}+\frac{y^2}{16}=1$ (d) $\frac{x^2}{16}+\frac{y^2}{25}=1$

19. If $f(x)=\log_x|\log x|$, then $f'(e)$ is equal to

(a) e (b) $-e$

(c) e^2 (d) e^{-1}

20. If $y=x+e^x$, then the value of $\frac{d^2x}{dy^2}$ is

(a) e^x (b) $-e^x(1+e^x)^{-3}$

(c) $-e^x(1+e^x)^{-2}$ (d) $(1+e^x)^{-2}$

21. If $x\sqrt{1+y}+y\sqrt{1+x}=0$, then $\frac{dy}{dx}$ is equal to

(a) $\frac{1}{(1+x)^2}$ (b) $\frac{1}{(1+x^2)}$

(c) $-\frac{1}{(1+x)^2}$ (d) $-\frac{1}{(1+x^2)}$

22. The differentiation of $\log\sqrt{\frac{1+\sin x}{1-\sin x}}$ with respect to x is

(a) $\cos x$ (b) $\log\cos x$

(c) $\frac{1}{2}(1+\sin x)$ (d) $\sec x$

23. If $x=a\left(\cos t+\log\tan\frac{t}{2}\right)$ and $y=a\sin t$, then $\frac{dy}{dx}$ is equal to

(a) $\cos t$ (b) $\log\tan t$

(c) $\operatorname{cosec} t$ (d) $\tan t$

24. The angle of intersection of the curves $y=x^2$ and $y=7-\frac{1}{6}x^3$ at $(1, 1)$ is

(a) $\frac{\pi}{4}$ (b) $\frac{\pi}{3}$

(c) $\frac{\pi}{2}$ (d) $\frac{\pi}{6}$

25. The curve $y-e^{xy}+x=0$ has a vertical tangent at

(a) (1, 1)

(b) no point

(c) (0, 1)

(d) (1, 0)

26. The minimum value of the function $y=x^3-12x$ on the interval $0\leq x\leq 3$ is

(a) 0 (b) –9

(c) –16 (d) –19

27. If $u=x^2y+y^2z+z^2x$, then the value of $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}$ is equal to

(a) $x+y+z$ (b) $(x+y+z)^2$

(c) $(x+y+z)^3$ (d) $x^2y^2z^2$

28. The value of $\int e^x\left(\frac{1}{x}-\frac{1}{x^2}\right)dx$ is equal to

(a) $\frac{e^x}{x}+C$ (b) $\frac{e^x}{x^2}+C$

(c) $e^x\left(1+\frac{1}{x}\right)+C$ (d) $e^x\log\left(1-\frac{1}{x}\right)+C$

29. $\int_0^1\frac{\tan^{-1}x}{1+x^2}dx$ is equal to

(a) $\frac{\pi}{4}$ (b) $\frac{\pi^2}{16}$

(c) $\frac{\pi^2}{32}$ (d) $\frac{\pi^2}{18}$

30. Area lying in the first quadrant and bounded by the circle $x^2+y^2=4$, the line $x=\sqrt{3}y$ and X-axis is

(a) π (b) $\frac{\pi}{2}$

(c) $\frac{\pi}{3}$ (d) $\frac{\pi}{4}$

31. The value of $\int_0^1\frac{dx}{1+x}$ by the trapezoidal rule, taking $n=2$, is

(a) $\frac{7}{24}$ (b) $\frac{11}{24}$

(c) $\frac{13}{24}$ (d) $\frac{17}{24}$

32. In Simpson $\frac{1}{3}$ rule, we approximate the integrand ove every pairs of adjacent sub-intervals by curves of degree

(a) 0 (b) 1

(c) 2 (d) 3

3. If $u = \sin^{-1}\left(\frac{\sqrt{x}-\sqrt{y}}{\sqrt{x}+\sqrt{y}}\right)$, then u_x is equal to

a) $-\frac{x}{y}u_y$ (b) $-\frac{y}{x}u_y$

c) $\frac{x}{y}u_y$ (d) $\frac{y}{x}u_y$

4. The solution of $\frac{dy}{dx} = \frac{3e^{2x}+3e^{4x}}{e^x+e^{-x}}$ is given by

a) $y = e^{4x} + x^2 + C$ (b) $ye^x = \frac{x^3}{3} + C$

c) $y = e^{3x} + C$ (d) $y = e^{-3x} + 6x + C$

5. The solution of $\frac{dy}{dx} = \cos(x+y)$ is

a) $\log\left|1+\tan\frac{(x+y)}{2}\right| = x + C$ (b) $\tan\left(\frac{x+y}{2}\right) = x + C$

c) $y = \sin(x+y) + C$ (d) $\tan(y+x) = x + \sec x + C$

6. The differential equation of all non-vertical lines in a plane $(ax + by = 1, b \neq 0)$ is

a) $\frac{dy}{dx} = 0$ (b) $\frac{dx}{dy} = 0$

c) $\frac{d^2x}{dy^2} = 0$ (d) $\frac{d^2y}{dx^2} = 0$

7. The solution of $(x+y)dx + xdy = 0$ is given by

a) $x^2 + y^2 = C$ (b) $2x^2 - y^2 = C$

c) $x^2 + 2xy = C$ (d) $y^2 + 2xy = C$

8. The solution of differential equation $y\frac{dy}{dx} = x - 1$, satisfying $y(1) = 1$ is

a) $y^2 = x^2 - 2x + 2$ (b) $y^2 = 2x^2 - x - 1$

c) $y = x^2 - 2x + 2$ (d) $y^2 = x + 2$

9. The integrating factor of the differential equation $\frac{dy}{dx} + \frac{2}{x}y = 3x^2y^{4/3}$, $x > 0$ is given by

a) $2\log x$ (b) x^2

c) $x^{2/3}$ (d) $x^{-2/3}$

10. The solution of the differential equation $(x+y+1)\frac{dy}{dx} = e^{x-y}$ is given by

a) $e^y = e^x + C$ (b) $(x+y)e^y = e^x + C$

c) $e^y = (x+1)e^x + C$ (d) $y = (x+1)\log x + C$

11. The solution of differential equation $\sqrt{1+x^2}dy + \sqrt{1+y^2}dx = 0$ is given by

a) $\sqrt{1+y^2} = \sqrt{1+x^2} + C$

b) $(y + \sqrt{1+y^2}) = (x + \sqrt{1+x^2}) + C$

c) $(y + \sqrt{1+y^2})(x + \sqrt{1+x^2}) = C$

d) $y = (\sqrt{1+x^2} + \sqrt{1+y^2}) + C$

42. The solution of differential equation $a\left(x\frac{dy}{dx} + 2y\right) = xy\frac{dy}{dx}$ is given by

(a) $yx^2 = e^{\frac{y+C}{a}}$ (b) $y = x^2e^y + C$

(c) $y = x^2 + e^{\frac{y+C}{a}}$ (d) $e^y = e^2 + \frac{x^2}{2} + C$

43. The solution of differential equation $\left(x\sin\frac{y}{x}\right)dy = \left(y\sin\frac{y}{x} - x\right)dx$ is given by

(a) $y = \sin\left(\frac{y}{x}\right)\log|x| + C$

(b) $\cos\left(\frac{y}{x}\right) = \log|x| + C$

(c) $\sin\left(\frac{y}{x}\right) = \cos\left(\frac{y}{x}\right) + C$

(d) $y = \sin\left(\frac{y}{x}\right)\cos\left(\frac{y}{x}\right) + \log|x| + C$

44. The order of differential equation $u_{x+3} - 5u_{x+2} = 2^x$ is

(a) 2 (b) 3

(c) 1 (d) 0

45. The general solution of differential equation $u_{x+2} - 7u_{x+1} + 10u_x = 12(4^x)$ is

(a) $u_x = C_1 2^x + C_2 5^x - 6 \cdot 4^x$

(b) $u_x = C_1 3^x + C_2 4^x - 6 \cdot 2^x$

(c) $u_x = C_1 x + C_2 x^2 - 12 \cdot 4^x$

(d) $u_x = C_1 e^x + C_2 x^3 - 4^x$

46. The particular integral of the differential equation $u_{x+2} - 7u_{x+1} + 10u_x = 12 \cdot 5^x$ is

(a) $3 \cdot 4^{x-1} \cdot x$ (b) $4 \cdot 5^x$

(c) $4 \cdot 5^{x-1}$ (d) $4 \cdot 5^{x-1} \cdot x$

47. The general solution of the differential equation $e^{dy/dx} = x^x$ is

(a) $y = e^x + C$ (b) $y = \log x + C$

(c) $y = \frac{x^2}{2}\log x + C$ (d) $y = \frac{x^2}{2}\left(\log x - \frac{1}{2}\right) + C$

48. The slope of the tangent at a point $P(x, y)$ on a curve is $\left\{-\frac{(y+3)}{(x+2)}\right\}$. If the curve passes through the origin, then equation of curve is

(a) $x^2 + 2x + 3 = 0$ (b) $x^2 + 2xy + y^2 = 0$

(c) $xy + 2y + 3x = 0$ (d) $xy + 2x + 3y = 0$

49. If $P(A)$ denotes the probability of an event A in a sample space, then the correct assertion is

(a) $P(A) \leq 0$ (b) $P(A) \geq 1$

(c) $0 \leq P(A) \leq 1$ (d) $-1 \leq P(A) \leq 1$

50. If A and B are two events belonging to a sample space. Then, the probability that exactly one of A, B occurs, is equal to

(a) $P(A) + P(B)$ (b) $P(A) + P(B) - P(A \cap B)$
(c) $P(A \cup B) - P(A \cap B)$ (d) $P(A) \cdot P(B)$

51. A letter is selected at random from the word 'PROBABILITY'. The probability that it is a vowel. is

(a) $\frac{2}{11}$ (b) $\frac{3}{11}$
(c) $\frac{4}{11}$ (d) 4

52. A number is chosen at random from among the first 30 natural numbers. The probability of the number chosen being a prime is

(a) $\frac{1}{3}$ (b) $\frac{3}{10}$
(c) $\frac{1}{30}$ (d) $\frac{11}{30}$

53. A point C divides the lines segment AB in the ratio 1 : 3. A car covers a distance AC with a speed of 10 km/h and the distance CB with a speed of 20 km/h. If V is the average speed of car. then V is equal to

(a) 13.33 km/h (b) 16 km/h
(c) 15 km/h (d) 17.5 km/h

54. If SD of a variate X is σ, then the SD of $aX + b$ is

(a) $a\sigma + b$ (b) σ
(c) $|a|\ \sigma$ (d) $(a + b)\ \sigma$

55. Of the following, the only one that is not a measure of dispersion, is

(a) SD (b) variance
(c) mean deviation (d) mode

56. Karl Pearson's coefficient of skewness of a distribution is 0.32. Its SD is 6.5 and mean is 39.6. The median of the distribution is given by

(a) 28.61 (b) 38.91
(c) 29.13 (d) 28.31

57. The sum of ten numbers is 12 and the sum of their squares is 16.9, then their variance is equal to

(a) 0.01 (b) 0.10
(c) 0.25 (d) 2.50

58. The binomial distribution, whose mean is 3 and variance is 2, is given by

(a) $\left(\frac{2}{3} + \frac{1}{3}\right)^3$ (b) $\left(\frac{2}{3} + \frac{1}{3}\right)^5$
(c) $\left(\frac{2}{3} + \frac{1}{3}\right)^6$ (d) $\left(\frac{2}{3} + \frac{1}{3}\right)^9$

59. For a bivariate distribution (x, y), if $\Sigma x = 50, \Sigma y = 60$, $\Sigma xy = 350$. $\bar{x} = 5, \bar{y} = 6$ variance of x is 4, variance of y is 9, then r, (Karl Pearson's Correlation Coefficient) is

(a) 5/36 (b) 5/6
(c) 11/3 (d) 11/18

60. Given that $y(0) = 1, y(1) = 0, y(2) = 1, y(3) = 10$, then the value of $y(4)$ is given by

(a) 20 (b) 30
(c) 33 (d) 36

61. The best fit straight line (in the sense of least squares) to the following data points

x	0	1	2	3	4
y	1	1.8	3.3	4.5	6.3

is given by

(a) $y = 1.02\ x + 5.7$ (b) $y = x + 7$
(c) $y = 1.22 + 0.65$ (d) $y = 1.33\ x + 0.72$

62. If $P(A) = \frac{3}{8}, P(B) = \frac{1}{2}$ and $P(A \cap B) = \frac{1}{4}$, then $P\left(\frac{\bar{B}}{\bar{A}}\right)$ is equal to

(a) 3/8 (b) 3/5
(c) 3/4 (d) 5/8

63. The values of mean and variance are equal in

(a) normal distribution (b) binomial distribution
(c) poisson distribution (d) uniform distribution

64. A set of instructions in a sequential manner telling the computer what to do is called

(a) instructor (b) compiler
(c) program (d) keyboard

65. Which of the following performs simple maths for CPU?

(a) DIMM (b) ALU
(c) BUS (d) Register

66. Which of the following is not a hardware of a computer?

(a) Monitor (b) Keyboard
(c) Window (d) Mouse

67. Which of the following is called brain of the computer?

(a) Motherboard (b) RAM
(c) CPU (d) Memory

68. WWW stands for

(a) World Word Web (b) World Wide Web
(c) Word Wide Web (d) World Work Web

69. The type of software used to carry out tasks, such as writing a letter, is called

(a) GUI software (b) Utility software
(c) Application software (d) System software

70. Which of the following key is pressed to work as directional arrow from number pad?

(a) Numlock (b) Capslock
(c) Arrowlock (d) Shift

71. An octal number 237 is equal to the binary number

(a) 010 011 111 (b) 010 111 011
(c) 011 101 101 (d) 011 000 001

72. One gigabyte is approximately equal to

(a) 1000 bytes
(b) 100, 000 bytes
(c) 1000, 000, 000 bytes
(d) 1000, 000, 000, 000 bytes

73. Which of the following is not a computer language?
(a) BASIC (b) COBOL
(c) LOTUS (d) FORTRAN

74. In how many different ways can the letters of the word 'ABILITY' be arranged?
(a) 1260 (b) 2520 (c) 2420 (d) 720

75. The value of $(73)^2 - (41)^2 + (29)^2$ is
(a) 4344 (b) 4321 (c) 4489 (d) 4649

76. The difference between 58% of a number and 37% of the same number is 399. The 72% of that number is equal to
(a) 1913 (b) 1330 (c) 1425 (d) 1368

77. The least number to be added to 4700 to make it a perfect square is
(a) 61 (b) 74
(c) 69 (d) 76

78. The cost of 10 pens and 12 pencils is ₹ 138. Then, the cost of 15 pens and 18 pencils will be
(a) ₹ 276 (b) ₹ 878
(c) ₹ 268 (d) ₹ 207

79. If in a certain code, RAIL is written as 5796 and TAPE is written as 3748, the PAIR is written in that code as
(a) 4795 (b) 4785 (c) 8795 (d) 3795

80. How many such pairs of letters are there in the word 'PHYSICAL' each of which has as many letters between them in the word as they have in the English alphabet?
(a) One (b) Two
(c) Three (d) None of these

81. If one-fourth of one-fifth of a number is 7, then three-fourteenth of that number will be
(a) 42 (b) 60
(c) 70 (d) 30

82. Ram has some hens and some cows. If the total number of animal heads are 43 and total number of feets are 142, then the number of hens are
(a) 28 (b) 21 (c) 15 (d) 27

83. The ratio of the present age of Sita and Gita is respectively. Seven years hence, the respectively ratio of their ages will be 4 : 9. Gita's present age is
(a) 63 yr (b) 42 yr (c) 56 yr (d) 49 yr

84. The average of five consecutive odd numbers A, B, C, D and E is 45. The product of B and D is equal to
(a) 2107 (b) 2205 (c) 2021 (d) 1935

85. What should be the compound interest on an amount of ₹ 5500 at the rate of 5% per annum after 2 yr ?
(a) ₹ 588 (b) ₹ 645
(c) ₹ 454.50 (d) ₹ 563.75

86. Two candidates contested an election. If one got 520 votes which was 65% of votes, then total number of votes polled is
(a) 858 (b) 800 (c) 780 (d) 754

87. If $x + y = 20$ and $xy = 84$, then the value of $x^2 + y^2$ is
(a) 232 (b) 400 (c) 128 (d) 168

88. The number of coins of diameter 1.5 cm and 0.2 cm thick, made out of a right circular cylinder of height 10 cm and diameter 4.5 cm, is
(a) 500 (b) 4750
(c) 450 (d) 425

89. In the binomial expansion of $(a + b)^n$, the coefficients of 4th and 13th terms are equal to each other. The value of n is
(a) 12 (b) 14 (c) 15 (d) 16

90. The coefficient of x^4 in the expansion of $(1 + 2x + 3x^2 + 4x^3 + \ldots)^{1/2}$ is
(a) 4 (b) 1 (c) 6 (d) 16

91. $\sum_{k=1}^{n} (-1)^k \, {}^nC_k$ is
(a) -1 (b) 2^k
(c) 2^n (d) 0

92. If n is multiple of 3, then the coefficient of x^n in the expansion of $\log(1 + x + x^2)$, is
(a) $\frac{1}{n}$ (b) $\frac{2}{n}$ (c) $-\frac{1}{n}$ (d) $-\frac{2}{n}$

93. The sum of the series
$\frac{2}{1!} + \frac{6}{2!} + \frac{12}{3!} + \frac{20}{4!} + \ldots$ is
(a) e (b) $2e$ (c) $3e$ (d) $\frac{3e}{2}$

94. If $x = \frac{1}{1\cdot 2} - \frac{1}{2\cdot 3} + \frac{1}{3\cdot 4} - \frac{1}{4\cdot 5} + \ldots$, then e^x is equal to
(a) $\frac{4}{e}$ (b) $\frac{e}{4}$ (c) $\log\left(\frac{4}{e}\right)$ (d) $\log\left(\frac{e}{4}\right)$

95. A matrix $A = [a_{ij}]$ is an upper triangular matrix, if
(a) it is a square matrix and $a_{ij} = 0, i < j$
(b) it is a square matrix and $a_{ij} = 0, i > j$
(c) it is not a square matrix and $a_{ij} = 0, i < j$
(d) it is not a square matrix and $a_{ij} = 0, i > j$

96. If A and B are two invertible matrices, then the inverse of AB is equal to
(a) AB (b) BA (c) $A^{-1}B^{-1}$ (d) $B^{-1}A^{-1}$

97. The matrix A satisfying the equation $\begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix} A = \begin{bmatrix} 1 & 1 \\ 0 & -1 \end{bmatrix}$ is
(a) $\begin{bmatrix} 1 & 4 \\ -1 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -4 \\ 1 & 0 \end{bmatrix}$
(c) $\begin{bmatrix} 1 & 4 \\ 0 & -1 \end{bmatrix}$ (d) $\begin{bmatrix} -1 & -4 \\ 1 & 0 \end{bmatrix}$

98. The solution set of equation $\begin{vmatrix} 1 & 3 & x \\ 1 & 1 & x^2 \\ 3 & 7 & 3 \end{vmatrix} = 0$ is
(a) ϕ (b) $\{0, 1\}$
(c) $\{1, -1\}$ (d) $\{1, -3\}$