Ultimate KCET Crash Course 2026

MATHEMATICS

DPP: 2

Matrices and Determinants

Q1 If the matrix $\begin{bmatrix} 1 & 3 & \lambda+2 \\ 2 & 4 & 8 \\ 3 & 5 & 10 \end{bmatrix}$ is singular, then l is

(A) –2 (B) 4
(C) 2 (D) –4

Q2 Find x, if $\begin{bmatrix} 1 & 2 & x \\ 1 & 1 & 2 \\ 2 & 1 & -2 \end{bmatrix}$ is singular.

(A) 7 (B) 6
(C) 5 (D) 8

Q3 If $\begin{vmatrix} x & 2 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 6 & 2 \\ 18 & 6 \end{vmatrix}$, then x

(A) 6 (B) ±6
(C) –6 (D) 0

Q4 If $A \begin{bmatrix} \alpha & 3 \\ 3 & \alpha \end{bmatrix}$ and $|A^3|$ = 216 then α =

(A) ±5 (B) $\pm\sqrt{15}$
(C) $\pm\sqrt{17}$ (D) ±6

Q5 If A is a square matrix of order $n \times n$, then adj(adj A) is equal to:

(A) $|A|^n A$ (B) $|A|^{n-1} A$
(C) $|A|^{n-2} A$ (D) $|A|^{n-3} A$

Q6 If $\Delta = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 0 & 1 \\ 5 & 3 & 8 \end{vmatrix}$, write the cofactor of element a_{22}

(A) 7 (B) -7
(C) -8 (D) 8

Q7 If $\det(A) = \begin{vmatrix} \sin\theta & 1 \\ 0 & \cos\theta \end{vmatrix} = -\frac{1}{4}$ where $\theta \in \left[\pi, \frac{3\pi}{2}\right]$, Then $\theta =$

(A) $\frac{\pi}{12}$ (B) $\frac{5\pi}{6}$
(C) $\frac{7\pi}{6}$ (D) $\frac{7\pi}{12}$

Q8 If $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$ is the inverse of the matrix $\begin{pmatrix} 1 & 5 \\ 7 & -3 \end{pmatrix}$, then d equals.

(A) -1/38 (B) -7/38
(C) 3/38 (D) 5/38

Q9 If $A = \begin{vmatrix} -1 & 2 & 4 \\ 3 & 1 & 0 \\ -2 & 4 & 2 \end{vmatrix}$ and $B = \begin{vmatrix} -2 & 4 & 2 \\ 6 & 2 & 0 \\ -2 & 4 & 8 \end{vmatrix}$ thenB is given by

(A) B = 4A (B) B = –4A
(C) B = –4 (D) B = 6A

Q10 If the determinant

$$\Delta = \begin{vmatrix} 3 & -2 & \sin 3\theta \\ -7 & 8 & \cos 2\theta \\ -11 & 14 & 2 \end{vmatrix} = 0$$ then $\sin\theta$ =

(A) 0, 1/2 (B) 0, 3/2
(C) 1/2, 1 (D) $\frac{1}{\sqrt{2}}, \frac{1}{2}$

Q11 If the matrices $A = \begin{bmatrix} 1 & 1 & 2 \\ 1 & 3 & 4 \\ 1 & -1 & 3 \end{bmatrix}$, B = adj A and C = 3A, then $\frac{|\text{adj } B|}{|C|}$ is equal to

(A) 16 (B) 2

(C) 8 (D) 72

Q12 There are two values of a which makes determinant, $\Delta = \begin{vmatrix} 1 & -2 & 5 \\ 2 & a & -1 \\ 0 & 4 & 2a \end{vmatrix} = 86$, then sum of these numbers is

(A) 4 (B) 5
(C) –4 (D) 9

Q13 If A is a matrix of order 3, and $|A| = 8$, then $|\text{adj } A|$ is

(A) 8 (B) 8^2
(C) 8^3 (D) $\frac{1}{8}$

Q14 The constant term of the polynomial $\begin{vmatrix} x^2+4 & 2x+2 & 4 \\ -4x+3 & 3x+1 & -6x+1 \\ 7x+2 & x^2-3 & x+1 \end{vmatrix}$ is

(A) 0 (B) –30
(C) 60 (D) –10

Q15 If A is a matrix of order 4 × 4 & $|A| = 3$, then $|6A|^{-1}$=

(A) 1/6480 (B) 1/80
(C) 6480 (D) 1/3888

Q16 The matrix having multiplicative inverse is

(A) $\begin{bmatrix} 4 & 12 \\ 3 & 9 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$
(C) $\begin{bmatrix} 3 & 2 \\ 6 & 4 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

Q17 If $\mathrm{B} = \begin{bmatrix} 1 & 3 \\ 1 & \alpha \end{bmatrix}$ be the adjoint of a matrix A and $|\mathrm{A}| = 2$, then the value of α is

(A) 3 (B) 4
(C) 5 (D) 2

Q18 If area of a triangle is 35 sq. units with vertices (2, –6), (5, 4) and (k, 4). Then k is

(A) 12 (B) -2
(C) -12, -2 (D) 12, -2

Q19 If $\mathrm{A} = \begin{vmatrix} -1 & 2 & 4 \\ 3 & 1 & 0 \\ -2 & 4 & 2 \end{vmatrix}$ and $\mathrm{B} = \begin{vmatrix} -2 & 4 & 2 \\ 6 & 2 & 0 \\ -2 & 4 & 8 \end{vmatrix}$ thenB is given by

(A) B = 4A (B) B = –4A
(C) B = –4 (D) B = 6A

Q20 If $A = \begin{bmatrix} 1 & 3 \\ 4 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 2 & -1 \\ 1 & 2 \end{bmatrix}$, then $|ABB'| =$

(A) 50 (B) –250
(C) 100 (D) 250

Q21 Let $A = \begin{pmatrix} 0 & 2q & r \\ p & q & -r \\ p & -q & r \end{pmatrix}$. If $AA^T = I_3$, then $|p|$ is

(A) $\frac{1}{\sqrt{3}}$ (B) $\frac{1}{\sqrt{2}}$
(C) $\frac{1}{\sqrt{5}}$ (D) $\frac{1}{\sqrt{6}}$

Q22 If 4x + 3y + 6z = 25, x + 9y + 7z = 13, 2x + 9y + z = 1, then z =

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

Q23 Using determinant, find the equation of line joining the points (1,-1) and (4,1).

(A) 2x -3y -5 = 0 (B) 4x - 3y = 0

(C) 2x - 4y = 5 (D) 2x + 3y = 5

Q24 Find equation of line joining (3,1) and (9, 3) using determinants

(A) x - 3y = 0 (B) x - 2y = 0
(C) 3x - y = 0 (D) 2x - y = 0

Android App | iOS App | PW Website

Q25 If $A=\begin{bmatrix}0 & 1+2i & i-2\\ -1-2i & 0 & K\\ 2-i & 7 & 0\end{bmatrix}$ and A^{-1} does not exist then $K=$ (where $i=\sqrt{-1}$)

(A) $1+2i$ (B) –7

(C) 7 (D) $1-2i$

Q26 If $A=\begin{bmatrix}1 & 3\\ 2 & 1\end{bmatrix}$, then the determinant A^2-2A is

(A) 5 (B) 25

(C) –5 (D) –25

Q27 If $A=\begin{bmatrix}3 & 1\\ -1 & 2\end{bmatrix}$ find A^{-1}.

(A) $\frac{1}{7}\begin{bmatrix}2 & -1\\ 1 & 3\end{bmatrix}$

(B) $\frac{1}{7}\begin{bmatrix}3 & 1\\ -1 & 2\end{bmatrix}$

(C) $\frac{1}{7}\begin{bmatrix}-2 & 1\\ -1 & -3\end{bmatrix}$

(D) $\frac{1}{7}\begin{bmatrix}2 & 1\\ 1 & -3\end{bmatrix}$

Q28 Using matrices, solve the following system of equations :

$3x+4y+7z=4; 2x-y+3z=-3; x+2y-3z=8$

(A) $x=2, y=-6, z=3$

(B) $x=6, y=3, z=-2$

(C) $x=1, y=1, z=2$

(D) $x=1, y=2, z=-1$

Q29 Find the value of λ if the points (1,-5),(-4,5), (λ,7) are collinear.

(A) -4 (B) -5

(C) -10 (D) 15

Q30 The constant term of the polynomial $\begin{vmatrix}x+3 & x & x+2\\ x & x+1 & x-1\\ x+2 & 2x & 3x+1\end{vmatrix}$ is

(A) 2 (B) 0

(C) 1 (D) –1

Answer Key

Q1	(B)
Q2	(D)
Q3	(B)
Q4	(B)
Q5	(C)
Q6	(B)
Q7	(D)
Q8	(A)
Q9	(B)
Q10	(A)
Q11	(C)
Q12	(C)
Q13	(B)
Q14	(B)
Q15	(D)
Q16	(B)
Q17	(C)
Q18	(D)
Q19	(B)
Q20	(B)
Q21	(B)
Q22	(D)
Q23	(A)
Q24	(A)
Q25	(B)
Q26	(B)
Q27	(A)
Q28	(D)
Q29	(B)
Q30	(D)

Android App | iOS App | PW Website

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

$|A| = 0$

$\Rightarrow -3\,[20-24] = (\lambda+2)\,[10-12] = 0$

$-3\,(-4) + (\lambda+2)\,(-2) = 0$

$12 - 2\lambda - 4 = 0$

$2\lambda = 8$

$\lambda = 4$

Video Solution:

Q2 Text Solution:

For singular matrix, |A| = 0

$\therefore \begin{vmatrix} 1 & 2 & x \\ 1 & 1 & 2 \\ 2 & 1 & -2 \end{vmatrix} = 0$

$\Rightarrow\ 1\,(-2-2) - 2\,(-2-4) + x\,(1-2) = 0$

$\Rightarrow\ -4 + 12 - x = 0 \quad \therefore x = 8$

Video Solution:

Q3 Text Solution:

$\begin{vmatrix} x & 2 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 6 & 2 \\ 18 & 6 \end{vmatrix}$

$\Rightarrow x^2 - 36 = 36 - 36$

$\Rightarrow x^2 = 36$

$\Rightarrow x = \pm 6$

Video Solution:

Q4 Text Solution:

Given $A = \begin{bmatrix} \alpha & 3 \\ 3 & \alpha \end{bmatrix}$ & $|A^3| = 216$

Then $|A| = 6$

$\Rightarrow\ \alpha^2 - 9 = 6$

$\Rightarrow\ \alpha^2 = 15$

$\alpha = \pm\sqrt{15}$

Video Solution:

Q5 Text Solution:

A is $n \times n$ square matrix , then adj(adj A) = $|A|^{n-2}A$

(By the property of adjoint of matrix)

Video Solution:

Q6 Text Solution:

We have, $\Delta = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 0 & 1 \\ 5 & 3 & 8 \end{vmatrix}$

Cofactor of

$$a_{22} = (-1)^{2+2}\begin{vmatrix} 1 & 3 \\ 5 & 8 \end{vmatrix} = 8 - 15 = -7$$

Video Solution:

Q7 Text Solution:

$$\sin\theta\ \cos\theta = -\frac{1}{4}$$

$$\frac{\sin 2\theta}{2} = -\frac{1}{4}$$

$$\sin 2\theta = -\frac{1}{2}$$

$$\text{Since } \theta \in \left[\pi,\ \frac{3\pi}{2}\right]$$

$$\sin 2\theta = \sin\left[\pi + \frac{\pi}{6}\right]$$

$$2\theta = \frac{7\pi}{6}$$

$$\theta = \frac{7\pi}{12}$$

Video Solution:

Q8 Text Solution:

$$A = \begin{bmatrix} 1 & 5 \\ 7 & -3 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} -3 & -5 \\ -7 & 1 \end{bmatrix}\left(\frac{-1}{38}\right)$$

$$A^{-1} = \begin{bmatrix} 3/38 & 5/38 \\ 7/38 & -1/38 \end{bmatrix} = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

$$d = \frac{-1}{38}$$

Video Solution:

Q9 Text Solution:

A = –1(2 – 0) – 2(6 – 0) + 4 (12 + 2)

= –2 – 12 + 56 = 42

B = – 2(16 – 0) – 4(48 – 0) + 2(24 + 4)

= –32 – 192 + 56 = –224 + 56 = –168

Clearly B = –4A

Video Solution:

Q10 Text Solution:

Expand wrt 3rd column

$$\text{Given}\begin{vmatrix} 3 & -2 & \sin 3\theta \\ -7 & 8 & \cos 2\theta \\ -11 & 14 & 2 \end{vmatrix} = 0$$

$$\sin 3\theta\,[-98 + 88] - \cos 2\theta\,[42 - 22] + 2\,[24 - 14] = 0$$

–10 sin 3θ – 20 cos 2θ + 20 = 0

sin 3θ + 2 cos 2θ – 2 = 0

3 sin θ – 4 sin$^3\theta$ + 2 – 2 sin$^2\theta$ – 2 = 0

4 sin^3 θ + 2 sin$^2\theta$ – 3 sin θ = 0

sin θ [4 sin$^2\theta$ + 2sin θ + 3] = 0

$$\sin\theta\,[2\sin\theta - 1]\,[2\sin\theta + 3] = 0$$

$\Rightarrow$ sinθ = 0; $\sin\theta = \frac{1}{2}$ is true

and $\sin\theta = \frac{-3}{2}$ Is not possible since sin $\theta \in [-1,\ 1]$

Video Solution:

Q11 Text Solution:

(C)

Here, $|A| = \begin{vmatrix} 1 & 1 & 2 \\ 1 & 3 & 4 \\ 1 & -1 & 3 \end{vmatrix}$

= (9 + 4) – 1 (3 – 4) + 2 (–1 – 3) = 13 + 1 – 8 = 6

Now, | dj B | = | adj (adj A) | =

$|\mathrm{A}|^{(\mathrm{n}-1)^2} = |\mathrm{A}|^4 = (6)^4$

Again, | C | = | 3A | = $3^3 \times 6$

$\therefore \frac{|\mathrm{adjB}|}{|\mathrm{C}|} = \frac{6^4}{3^3 \times 6} = 8$

Video Solution:

Q12 Text Solution:

On solving the determinant we get

$a = -7 \;\&\; a = 3$

Now the required sum of these numbers is –4

Video Solution:

Q13 Text Solution:

By using the property

$|AdjA| = |A|^{n-1} \Rightarrow |AdjA| = 8^2$

where 'n' is order of the given matrix.

Video Solution:

Q14 Text Solution:

Put x = 0

We get $\begin{vmatrix} 4 & 2 & 4 \\ +3 & 1 & 1 \\ 2 & -3 & 1 \end{vmatrix} = -30$

Video Solution:

Q15 Text Solution:

$|6A|^{-1} = (6^{-1})^4 \; A|^{-1} = \frac{1}{6^4} \frac{1}{|A|} = \frac{1}{1296 \times (3)}$

= 1/3888

Video Solution:

Q16 Text Solution:

$A = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix} \text{since} |A| \neq 0$

Video Solution:

Q17 Text Solution:

$|\mathrm{B}| = |\mathrm{adjA}| = |\mathrm{A}| = \alpha - 3 = 2 \Rightarrow \alpha = 5$

Video Solution:

Q18 Text Solution:

By application of determinants

$$1/2 \begin{vmatrix} 2 & -6 & 1 \\ 5 & 4 & 1 \\ k & 4 & 1 \end{vmatrix} = 35$$

on solving the above determinant we get

$k = 12 \ \& \ k = -2$

Video Solution:

Q19 Text Solution:

A = –1(2 – 0) – 2(6 – 0) + 4 (12 + 2)

= –2 – 12 + 56 = 42

B = – 2(16 – 0) – 4(48 – 0) + 2(24 + 4)

= –32 – 192 + 56 = –224 + 56 = –168

Clearly B = –4A

Video Solution:

Q20 Text Solution:

$$\left|ABB'\right| = \left|A\right|\left|B\right|\left|B'\right|$$

$$= \begin{vmatrix} 1 & 3 \\ 4 & 2 \end{vmatrix} \begin{vmatrix} 2 & -1 \\ 1 & 2 \end{vmatrix} \begin{vmatrix} 2 & 1 \\ -1 & 2 \end{vmatrix}$$

$$= \left(-10\right)\left(5\right)\left(5\right) = -250$$

Video Solution:

Q21 Text Solution:

Here, $A = \begin{pmatrix} 0 & 2q & r \\ p & q & -r \\ p & -q & r \end{pmatrix}$

$\therefore\ A^T = \begin{pmatrix} 0 & p & p \\ 2q & q & -q \\ r & -r & r \end{pmatrix}$

$\therefore\ AA^T$

$$= \begin{pmatrix} 0 & 2q & r \\ p & q & -r \\ p & -q & r \end{pmatrix} \begin{pmatrix} 0 & p & p \\ 2q & q & -q \\ r & -r & r \end{pmatrix}$$

$$= \begin{pmatrix} 4q^2 + r^2 & 2q^2 - r^2 & -2q^2 + r^2 \\ 2q^2 - r^2 & p^2 + q^2 + r^2 & p^2 - q^2 - r^2 \\ -2q^2 + r^2 & p^2 - q^2 - r^2 & p^2 + q^2 + r^2 \end{pmatrix}$$

Also, $AA^T = I_3$

$\Rightarrow\ 2q^2 = r^2, p^2 = q^2 + r^2$ and $p^2 + q^2 + r^2 = 1$

$\therefore\ |p| = \frac{1}{\sqrt{2}}$

Video Solution:

Q22 Text Solution:

The given equation are

$4x + 3y + 6z = 25$

$x + 5y + 7z = 13$

$2x + 9y + z = 1$

The above equations can be written in matrix form as,

$$\begin{bmatrix} 4 & 3 & 6 \\ 1 & 5 & 7 \\ 2 & 9 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 25 \\ 13 \\ 1 \end{bmatrix}$$

Now,

$$|A| = \begin{vmatrix} 4 & 3 & 6 \\ 1 & 5 & 7 \\ 2 & 9 & 1 \end{vmatrix} = 4(5 - 63) - 3(1 - 14) + 6(9 - 10)$$

$$= -232 + 39 - 6 = -199 \neq 0$$

So, A is invertible

$\therefore$The given system has unique solution,

$X = A^{-1}B$

Now, cofactor matrix of A

$$= \begin{bmatrix} -58 & 13 & -1 \\ 51 & -8 & -30 \\ -9 & -22 & 17 \end{bmatrix}$$

$$\therefore\ \text{adj } A = \begin{bmatrix} -58 & 13 & -1 \\ 51 & -8 & -30 \\ -9 & -22 & 17 \end{bmatrix}^T$$

$$= \begin{bmatrix} -58 & 51 & -9 \\ 13 & -8 & -22 \\ -1 & -30 & 17 \end{bmatrix}$$

So, $A^{-1} = \frac{1}{|A|}(\text{adj} A)$

$$= \frac{-1}{199} \begin{bmatrix} -58 & 51 & -9 \\ 13 & -8 & -22 \\ -1 & -30 & 17 \end{bmatrix}$$

$\therefore\ X = A^{-1}B$

$$= \frac{-1}{199} \begin{bmatrix} -58 & 51 & -9 \\ 13 & -8 & -22 \\ -1 & -30 & 17 \end{bmatrix} \begin{bmatrix} 25 \\ 13 \\ 1 \end{bmatrix}$$

$$= \frac{-1}{199} \begin{bmatrix} -1450 + 663 - 9 \\ 325 - 104 - 22 \\ -25 - 390 + 17 \end{bmatrix}$$

$$= \frac{-1}{199} \begin{bmatrix} -796 \\ 199 \\ -398 \end{bmatrix} \Rightarrow \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 4 \\ -1 \\ 2 \end{bmatrix}$$

On comparing, we get $x = 4, y = -1$ and z = 2

Video Solution:

Q23 Text Solution:

Equation of line is

$$\begin{vmatrix} x & y & 1 \\ x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \end{vmatrix} = 0$$

$$\begin{vmatrix} x & y & 1 \\ 1 & -1 & 1 \\ 4 & 1 & 1 \end{vmatrix} = 0$$

$$x(-1-1) - y(1-4) + 1(1+4) = 0$$

$$-2x + 3y + 5 = 0$$

$$2x - 3y - 5 = 0$$

Video Solution:

Q24 Text Solution:

Equation of the line is

$$\begin{vmatrix} x & y & 1 \\ x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \end{vmatrix} = 0 \Rightarrow \begin{vmatrix} x & y & 1 \\ 3 & 1 & 1 \\ 9 & 3 & 1 \end{vmatrix} = 0$$

$$\Rightarrow x(1-3) - y(3-9) + 1(9-9) = 0$$

$$\Rightarrow \quad -2x + 6y = 0 \Rightarrow x - 3y = 0$$

Hence, x - 3y = 0 is the required line

Video Solution:

Q25 Text Solution:

$$A = \begin{bmatrix} 0 & i+2i & i-2 \\ -1-2i & 0 & K \\ 2-i & 7 & 0 \end{bmatrix}$$

Given that, A^{-1} does not exist.

$\Rightarrow |A| = 0$

$\Rightarrow 0 - (1 + 2i)(-K(2 - i)) + (i - 2)(-7 - 14i) = 0$

(expanding along A)

$\Rightarrow (1 + 2i)(2K - Ki) - 7i + 14 + 14 + 28i = 0$

$\Rightarrow 2K - Ki + 4Ki + 2K - 7i + 28 + 28i = 0$

$\Rightarrow (28 + 4K) + (3K + 21)i = 0$

$\Rightarrow 28 + 4K = 0$ and $3K + 21 = 0$ Þ $K = -7$

Video Solution:

Q26 Text Solution:

$$A^2 - 2A = \begin{bmatrix} 7 & 6 \\ 4 & 7 \end{bmatrix} - \begin{bmatrix} 2 & 6 \\ 4 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix}$$

$$Now \begin{vmatrix} 5 & 0 \\ 0 & 5 \end{vmatrix} = 25$$

Video Solution:

Q27 Text Solution:

$$\text{Given, } A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$$

$$(\text{adj } A) = \begin{bmatrix} 2 & -1 \\ 1 & 3 \end{bmatrix}$$

$$|A| = 6 + 1 = 7$$

$$A^{-1} = \frac{1}{7}\begin{bmatrix} 2 & -1 \\ 1 & 3 \end{bmatrix}$$

Video Solution:

Q28 Text Solution:

$3x+4y+7z=4$

$2x-y+3z=-3$

$x+2y-3z=8$

The system of equations can be written as

$AX=B$

Where, $A=\begin{bmatrix}3&4&7\\2&-1&3\\1&2&-3\end{bmatrix}; X=\begin{bmatrix}x\\y\\z\end{bmatrix}$

and $B=\begin{bmatrix}4\\-3\\8\end{bmatrix}$

Now, $|A|=\begin{vmatrix}3&4&7\\2&-1&3\\1&2&-3\end{vmatrix}$

$=3(3-6)-4(-6-3)+7(4+1)=-9$
$+36+35=62\neq 0$

$\therefore\ A^{-1}$ exists. So, system of equations has a unique solution given by $X=A^{-1}B$

Now,

$A_{11}=-3, A_{12}=9, A_{13}=5, A_{21}=26, A_{22}$
$=-16$

$A_{23}=-2, A_{31}=19, A_{32}=5, A_{33}=-11$

$\therefore\ \operatorname{adj}A=\begin{bmatrix}-3&26&19\\9&-16&5\\5&-2&-11\end{bmatrix}$

$A^{-1}=\frac{1}{|A|}\cdot\operatorname{adj}A$

$=\frac{1}{62}\begin{bmatrix}-3&26&19\\9&-16&5\\5&-2&-11\end{bmatrix}$

Now, $X=A^{-1}B$

$=\frac{1}{62}\begin{bmatrix}-3&26&19\\9&-16&5\\5&-2&-11\end{bmatrix}\begin{bmatrix}4\\-3\\8\end{bmatrix}$

$=\frac{1}{62}\begin{bmatrix}62\\124\\-62\end{bmatrix}$

$\Rightarrow\begin{bmatrix}x\\y\\z\end{bmatrix}=\begin{bmatrix}1\\2\\-1\end{bmatrix}\Rightarrow x=1, y=2, z=$
-1

Video Solution:

Q29 Text Solution:

The given points are collinear if

$\begin{vmatrix}1&-5&1\\-4&5&1\\\lambda&7&1\end{vmatrix}=0$

$\Rightarrow 1(-2)+5(-4-\lambda)+1(-28-5\lambda)$
$=0$

$\Rightarrow -50-10\lambda=0\Rightarrow\lambda=-5$

Video Solution:

Q30 Text Solution:

Put x = 0

$$\therefore \text{ We get } \begin{vmatrix} 3 & 0 & 2 \\ 0 & 1 & -1 \\ 2 & 0 & 1 \end{vmatrix}$$

We get

$3 - 4 = -1$

Video Solution:

Android App | iOS App | PW Website