Systems, Matrices, and Determinants

Matrix methods, determinants, and systems of linear equations.

Name _____ Date _____

32 main · 2-up grid · 11 pages · visible side quests

Completion Reward

Shown here as a small pack artifact, not a preview destination.

1. How many rows and columns does a 2 x 3 matrix have?

col 1	col 2	col 3
1	2	3
4	5	6

A 2 x 3 matrix has 2 horizontal rows and 3 vertical columns.

A. 3 rows and 2 columns
B. 2 rows and 3 columns
C. 2 rows and 2 columns
D. 3 rows and 3 columns

1.1. A matrix with 3 rows and 2 columns is called:

A. 2 x 3
B. 3 x 2
C. 5 x 1
D. 1 x 5

1.2. How many entries are in a 2 x 4 matrix?

A. 6
B. 8
C. 10
D. 12

1.3. An augmented matrix organizes:

A. a system of equations
B. a polynomial factorization
C. a unit-circle table
D. a single scalar

1.4. In an augmented matrix, the column after the bar usually holds:

A. determinants
B. constant terms
C. variable names
D. row numbers

1.5. Each row of an augmented matrix represents:

A. one variable
B. one equation
C. one determinant
D. one graph

2. What does an augmented matrix represent?

x	y	const
1	2	5
3	-1	4

The coefficient entries stay in their variable columns, and the constants appear in the final augmented column.

A. A system of equations with coefficients and constants
B. Only a graph of one line
C. A determinant table
D. A probability tree

2.1. A matrix with 3 rows and 2 columns is called:

A. 2 x 3
B. 3 x 2
C. 5 x 1
D. 1 x 5

2.2. How many entries are in a 2 x 4 matrix?

A. 6
B. 8
C. 10
D. 12

2.3. An augmented matrix organizes:

A. a system of equations
B. a polynomial factorization
C. a unit-circle table
D. a single scalar

2.4. In an augmented matrix, the column after the bar usually holds:

A. determinants
B. constant terms
C. variable names
D. row numbers

2.5. Each row of an augmented matrix represents:

A. one variable
B. one equation
C. one determinant
D. one graph

3. For [[a, b], [c, d]], what is the determinant?

col 1	col 2
a	b
c	d

For a 2 x 2 matrix, the determinant is the product of one diagonal minus the product of the other.

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d - b - c

3.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

3.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

3.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

3.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

3.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

4. If a 2 x 2 matrix has determinant 0, what is true?

col 1	col 2
2	4
1	2

A zero determinant indicates dependent row structure, which means the matrix is not invertible.

A. It is not invertible.
B. It must be the zero matrix.
C. It must have two equal rows or dependent structure.
D. Its determinant must be positive.

4.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

4.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

4.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

4.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

4.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

5. What must match for two matrices to be added?

A. They must have the same dimensions.
B. They must have determinant 1.
C. They must be square.
D. They must both represent systems.

5.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

5.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

5.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

5.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

5.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

6. Which matrix is invertible?

A. [[2, 4], [1, 2]]
B. [[1, 2], [3, 5]]
C. [[0, 0], [1, 1]]
D. [[3, 6], [2, 4]]

6.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

6.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

6.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

6.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

6.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

7. Which matrix is the 2 x 2 identity matrix?

col 1	col 2
1	0
0	1

Multiplying by the identity leaves a matrix unchanged.

A. [[0, 1], [1, 0]]
B. [[1, 0], [0, 1]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

7.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

7.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

7.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

7.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

7.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

8. What is a useful first step when turning a system into an augmented matrix?

x-column	y-column	constant
coefficients of x	coefficients of y	right side

Keep each variable in its own column before appending the constants.

A. Take determinants first.
B. Place coefficients in columns and constants on the right.
C. Graph the lines before writing anything.
D. Multiply the equations together.

8.1. A matrix with 3 rows and 2 columns is called:

A. 2 x 3
B. 3 x 2
C. 5 x 1
D. 1 x 5

8.2. How many entries are in a 2 x 4 matrix?

A. 6
B. 8
C. 10
D. 12

8.3. An augmented matrix organizes:

A. a system of equations
B. a polynomial factorization
C. a unit-circle table
D. a single scalar

8.4. In an augmented matrix, the column after the bar usually holds:

A. determinants
B. constant terms
C. variable names
D. row numbers

8.5. Each row of an augmented matrix represents:

A. one variable
B. one equation
C. one determinant
D. one graph

9. A student says det([[a, b], [c, d]]) = ab - cd. What is the mistake?

A. They should add the diagonals.
B. They forgot the matrix must be 3 x 3.
C. They used the wrong entry pairs; the determinant is ad - bc.
D. The determinant formula should always be squared.

9.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

9.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

9.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

9.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

9.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

10. Find det([[2, 1], [5, 3]]). Answer with a number.

10.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

10.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

10.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

10.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

10.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

11. Find det([[4, 2], [1, 7]]). Answer with a number.

11.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

11.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

11.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

11.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

11.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

12. Solve x + y = 7 and x - y = 1. Answer with a number.

12.1. Solve x + y = 7 and x - y = 1 for x.

A. 3
B. 4
C. 5
D. 6

12.2. For x + y = 7 and x - y = 1, y equals:

A. 1
B. 2
C. 3
D. 4

12.3. For 2x + y = 5 and x - y = 1, the coefficient matrix is:

A. [[2, 5], [1, 1]]
B. [[2, 1], [1, -1]]
C. [[5, 2], [1, -1]]
D. [[2, 1], [5, 1]]

12.4. When solving a system with matrices, a good first step is to:

A. rewrite the equations as an augmented matrix
B. take the square root of every term
C. differentiate both equations
D. graph only the y-intercepts

12.5. For 2x + y = 5 and x - y = 1, what is x?

A. 1
B. 2
C. 3
D. 4

13. For x + y = 7 and x - y = 1, find y. Answer with a number.

13.1. Solve x + y = 7 and x - y = 1 for x.

A. 3
B. 4
C. 5
D. 6

13.2. For x + y = 7 and x - y = 1, y equals:

A. 1
B. 2
C. 3
D. 4

13.3. For 2x + y = 5 and x - y = 1, the coefficient matrix is:

A. [[2, 5], [1, 1]]
B. [[2, 1], [1, -1]]
C. [[5, 2], [1, -1]]
D. [[2, 1], [5, 1]]

13.4. When solving a system with matrices, a good first step is to:

A. rewrite the equations as an augmented matrix
B. take the square root of every term
C. differentiate both equations
D. graph only the y-intercepts

13.5. For 2x + y = 5 and x - y = 1, what is x?

A. 1
B. 2
C. 3
D. 4

14. For 2x + y = 5 and x - y = 1, the determinant of the coefficient matrix is what? Answer with a number.

14.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

14.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

14.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

14.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

14.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

15. Solve 2x + y = 5 and x - y = 1 for x. Answer with a number.

15.1. Solve x + y = 7 and x - y = 1 for x.

A. 3
B. 4
C. 5
D. 6

15.2. For x + y = 7 and x - y = 1, y equals:

A. 1
B. 2
C. 3
D. 4

15.3. For 2x + y = 5 and x - y = 1, the coefficient matrix is:

A. [[2, 5], [1, 1]]
B. [[2, 1], [1, -1]]
C. [[5, 2], [1, -1]]
D. [[2, 1], [5, 1]]

15.4. When solving a system with matrices, a good first step is to:

A. rewrite the equations as an augmented matrix
B. take the square root of every term
C. differentiate both equations
D. graph only the y-intercepts

15.5. For 2x + y = 5 and x - y = 1, what is x?

A. 1
B. 2
C. 3
D. 4

16. Solve 2x + y = 5 and x - y = 1 for y. Answer with a number.

16.1. Solve x + y = 7 and x - y = 1 for x.

A. 3
B. 4
C. 5
D. 6

16.2. For x + y = 7 and x - y = 1, y equals:

A. 1
B. 2
C. 3
D. 4

16.3. For 2x + y = 5 and x - y = 1, the coefficient matrix is:

A. [[2, 5], [1, 1]]
B. [[2, 1], [1, -1]]
C. [[5, 2], [1, -1]]
D. [[2, 1], [5, 1]]

16.4. When solving a system with matrices, a good first step is to:

A. rewrite the equations as an augmented matrix
B. take the square root of every term
C. differentiate both equations
D. graph only the y-intercepts

16.5. For 2x + y = 5 and x - y = 1, what is x?

A. 1
B. 2
C. 3
D. 4

17. A 2x2 matrix is invertible if its determinant is not what? Answer with a number.

17.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

17.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

17.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

17.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

17.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

18. Find det([[3, 0], [2, 5]]). Answer with a number.

18.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

18.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

18.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

18.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

18.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

19. Solve x + 2y = 9 and x - y = 0 for x. Answer with a number.

19.1. Solve x + y = 7 and x - y = 1 for x.

A. 3
B. 4
C. 5
D. 6

19.2. For x + y = 7 and x - y = 1, y equals:

A. 1
B. 2
C. 3
D. 4

19.3. For 2x + y = 5 and x - y = 1, the coefficient matrix is:

A. [[2, 5], [1, 1]]
B. [[2, 1], [1, -1]]
C. [[5, 2], [1, -1]]
D. [[2, 1], [5, 1]]

19.4. When solving a system with matrices, a good first step is to:

A. rewrite the equations as an augmented matrix
B. take the square root of every term
C. differentiate both equations
D. graph only the y-intercepts

19.5. For 2x + y = 5 and x - y = 1, what is x?

A. 1
B. 2
C. 3
D. 4

20. Solve x + 2y = 9 and x - y = 0 for y. Answer with a number.

20.1. Solve x + y = 7 and x - y = 1 for x.

A. 3
B. 4
C. 5
D. 6

20.2. For x + y = 7 and x - y = 1, y equals:

A. 1
B. 2
C. 3
D. 4

20.3. For 2x + y = 5 and x - y = 1, the coefficient matrix is:

A. [[2, 5], [1, 1]]
B. [[2, 1], [1, -1]]
C. [[5, 2], [1, -1]]
D. [[2, 1], [5, 1]]

20.4. When solving a system with matrices, a good first step is to:

A. rewrite the equations as an augmented matrix
B. take the square root of every term
C. differentiate both equations
D. graph only the y-intercepts

20.5. For 2x + y = 5 and x - y = 1, what is x?

A. 1
B. 2
C. 3
D. 4

21. Find det([[1, 0], [0, 1]]). Answer with a number.

21.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

21.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

21.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

21.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

21.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

22. When adding [[2, 3], [1, 4]] and [[5, 1], [0, 2]], what is the top-right entry? Answer with a number.

22.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

22.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

22.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

22.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

22.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

23. Add [[1, 2], [3, 4]] and [[5, 6], [7, 8]]. Answer as a matrix.

23.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

23.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

23.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

23.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

23.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

24. Subtract [[1, 1], [2, 2]] from [[5, 4], [3, 2]]. Answer as a matrix.

24.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

24.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

24.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

24.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

24.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

25. Multiply 3 by [[2, -1], [0, 4]]. Answer as a matrix.

25.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

25.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

25.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

25.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

25.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

26. Compute [[2, 1]] * [[3], [4]]. Answer as a matrix.

26.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

26.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

26.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

26.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

26.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

27. Write the determinant expression for [[a, b], [c, d]]. Answer as an equation.

col 1	col 2
a	b
c	d

Take the main diagonal product and subtract the off-diagonal product.

27.1. What is det([[3, 1], [2, 5]])?

A. 13
B. 17
C. 11
D. 7

27.2. Which matrix is invertible?

A. [[1, 2], [2, 4]]
B. [[2, 1], [3, 5]]
C. [[4, 8], [1, 2]]
D. [[0, 0], [3, 1]]

27.3. If a 2 x 2 determinant is 0, the matrix is:

A. invertible
B. noninvertible
C. the identity
D. always symmetric

27.4. For [[a, b], [c, d]], the determinant uses:

A. ab - cd
B. ad - bc
C. ac - bd
D. a + d

27.5. In Cramer's rule for a 2 x 2 system, the denominator is:

A. the determinant of the coefficient matrix
B. the determinant of the identity matrix
C. always 1
D. the sum of the constants

28. Which student correctly adds [[1, 2], [3, 4]] and [[5, 6], [7, 8]]?

A. Student B: [[5, 12], [21, 32]]
B. Student C: [[1, 2, 5, 6], [3, 4, 7, 8]]
C. Student D: [[6, 8], [10, 32]]
D. Student A: [[6, 8], [10, 12]]

28.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

28.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

28.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

28.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

28.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

29. Write the augmented matrix for x + 2y = 5 and 3x - y = 4. Answer as an equation.

29.1. A matrix with 3 rows and 2 columns is called:

A. 2 x 3
B. 3 x 2
C. 5 x 1
D. 1 x 5

29.2. How many entries are in a 2 x 4 matrix?

A. 6
B. 8
C. 10
D. 12

29.3. An augmented matrix organizes:

A. a system of equations
B. a polynomial factorization
C. a unit-circle table
D. a single scalar

29.4. In an augmented matrix, the column after the bar usually holds:

A. determinants
B. constant terms
C. variable names
D. row numbers

29.5. Each row of an augmented matrix represents:

A. one variable
B. one equation
C. one determinant
D. one graph

30. Compute [[1, 2], [0, 1]] * [[3, 1], [4, 2]]. Answer as a matrix.

30.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

30.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

30.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

30.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

30.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

31. Compute [[2, 5], [1, 3]] * [[1, 0], [0, 1]]. Answer as a matrix.

31.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

31.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

31.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

31.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

31.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]

32. Write the coefficient matrix for 2x + 3y = 7 and -x + 4y = 5. Answer as an equation.

32.1. What must match for two matrices to be added?

A. their determinants
B. their dimensions
C. their inverses
D. their traces

32.2. Which matrix is the 2 x 2 identity matrix?

A. [[1, 0], [0, 1]]
B. [[0, 1], [1, 0]]
C. [[1, 1], [1, 1]]
D. [[2, 0], [0, 2]]

32.3. Multiplying a matrix by the identity matrix does what?

A. changes every sign
B. leaves the matrix unchanged
C. transposes the matrix
D. makes the determinant 0

32.4. If 2[[1, 3], [0, -2]] is computed, the top row becomes:

A. [1, 3]
B. [2, 6]
C. [3, 9]
D. [2, 3]

32.5. What is [[1, 2], [3, 4]] + [[4, 3], [2, 1]]?

A. [[5, 5], [5, 5]]
B. [[4, 6], [6, 4]]
C. [[1, 6], [6, 1]]
D. [[5, 6], [7, 8]]