

MATH1314 College Algebra
Review for Exam 4

Expand the expression.

1) $\log_4 \frac{x^4 y^7}{5}$

Write the expression as one logarithm.

2) $4 \log(x+3) - 5 \log(x^2+4) + \frac{1}{3} \log y$

Use the change of base formula to approximate the logarithm to four decimal places.

3) $\log_9 92.45$

Use common or natural logarithms to solve the exponential equation symbolically.

4) $5(12 - 4x) = 1$

Solve the logarithmic equation symbolically.

5) $\log(3 - x) = 4$

Solve the system of linear equations.

6) $x + y = 1$
 $x - y = 5$

Solve.

7) $x - y + 3z = -10$
 $5x + z = -4$
 $x + 2y + z = -8$

Solve the system by using Gaussian elimination with backward substitution or by reducing the matrix to reduced-row echelon form.

8) $x + y + z = 8$
 $x - y + 2z = 6$
 $2x + y + z = 9$

Perform the matrix operation.

9) Let $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 4 \\ -1 & 6 \end{bmatrix}$. Find $2A + B$.

If possible, find the matrix product of AB .

10) $A = \begin{bmatrix} 1 & 3 & -1 \\ 4 & 0 & 4 \end{bmatrix}$; $B = \begin{bmatrix} 3 & 0 \\ -1 & 1 \\ 0 & 4 \end{bmatrix}$

Determine if matrix A is invertible.

11) $A = \begin{bmatrix} -1 & 2 \\ 2 & -1 \end{bmatrix}$

Find det A using the method of cofactors.

$$12) A = \begin{bmatrix} 2 & 4 & 6 \\ 6 & 0 & 6 \\ 3 & 3 & 5 \end{bmatrix}$$

Use Cramer's rule to solve the system of linear equations.

$$13) \begin{aligned} 7x - 4y &= 36 \\ 2x + 4y &= 36 \end{aligned}$$

Answer Key

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1) $4 \log_4 x + 7 \log_4 y - \log_4 5$

2) $\log \frac{(x+3)^4 \sqrt[3]{y}}{(x^2+4)^5}$

3) 2.0602

4) $x = 3 - \frac{\log 1}{4 \log 5}$

5) $x = -9997$

6) (3, -2)

7) (0, -2, -4)

8) (1, 3, 4)

9) $\begin{bmatrix} 2 & 10 \\ 3 & 14 \end{bmatrix}$

10) $AB = \begin{bmatrix} 0 & -1 \\ 12 & 16 \end{bmatrix}$

11) Invertible

12) 24

13) (8, 5)