

Algebra IIB Final Review Part 2

1. Simplify. (8.4)

$$\frac{\frac{5}{m}}{\frac{6}{n}}$$

2. Simplify. (8.4)

$$\frac{\frac{x^2 - 4x - 21}{x^2 - 3x - 28}}{\frac{x^2 - 2x - 15}{x^2 + 6x + 8}}$$

3. Solve: (8.6)

$$\frac{m+4}{m-5} = \frac{1}{m-4} + \frac{1}{m^2 - 9m + 20}$$

4. Find the missing number(s) of the arithmetic sequence: (9.1)

$$-22, \text{-----}, -30, -34, -38, -42$$

5. Find the missing number of the arithmetic sequence: (9.1)

$$\frac{1}{5}, \frac{1}{3}, \frac{7}{15}, \frac{3}{5}, \text{-----}$$

6. Write an expression to describe the arithmetic sequence below, and then find the n th term. Use n to represent the position of a term in the sequence, where $n = 1$ for the first term. (9.1)

$$5, 12, 19, 26, \dots$$

7. Find the 11th term of the arithmetic sequence represented by the equation: (9.1)

$$a_n = 42 + (n - 1)(-5)$$

8. Find the 39th term of the given arithmetic sequence: (9.1)

$$-42, -36, -30, -24, -18, \dots$$

9. Find the missing number of the geometric sequence. (9.2)

$$\frac{1}{3}, \frac{1}{12}, \frac{1}{48}, \frac{1}{192}, \text{-----}$$

10. Write an equation to describe the geometric sequence below. (9.2)

$$\frac{-11}{21}, \frac{-55}{84}, \frac{-275}{336}, \dots$$

11. State the 12th term of the geometric sequence represented by the following: (9.3)

$$a_n = 12(3)^{n-1}$$

12. State the 23rd term of the geometric sequence: (9.2)

2097152, 1048576, 524288, 262144, ...

13. Find the sum of the first 51 terms of the arithmetic series: (9.4)

$$3 + 9 + 15 + 21 + \dots$$

14. Find the sum of the first 7 terms of the geometric series: (9.4)

$$4 + 12 + 36 + \dots$$

15. A child puts \$1.00 into a piggy bank. One week later, he puts \$1.75 in the bank. Two weeks later, he puts \$2.50 in the bank, and so on. How much money does he put in the bank on the 29th week? (9.4)

16. What is the value of x in the geometric sequence?
(9.4)

$$x, \frac{1}{3}, \frac{-1}{27}, \frac{1}{243}, \dots$$

17. How many terms are there in a geometric series if the first term is 4, the common ratio is 3, and the sum of the series is 39364? (9.4)

18. State whether the matrix is a row matrix, a column matrix, a square matrix, or an identity matrix.
(12.1)

$$\begin{bmatrix} 4 \\ -7 \end{bmatrix}$$

19. State the dimensions of the matrix. (12.1)

$$\begin{bmatrix} -1 & 4 \\ 0 & 8 \\ -3 & 7 \end{bmatrix}$$

20. State the element found in row 3 and column 4 of the matrix. (12.1)

$$\begin{bmatrix} 14 & 9 & 0 & -1 & 18 \\ 27 & 93 & 47 & 8 & -16 \\ 17 & -23 & 27 & 92 & 0 \end{bmatrix}$$

21. State the dimensions of the resulting matrix: (12.2)

$$\begin{bmatrix} 4 \\ 0 \\ 5 \end{bmatrix} + \begin{bmatrix} 2 \\ -8 \\ 3 \end{bmatrix}$$

22. State the dimensions of the resulting matrix: (12.2)

$$\begin{bmatrix} -8 \\ -6 \\ -11 \end{bmatrix} \cdot \begin{bmatrix} 1 & 4 & 7 \end{bmatrix}$$

23. Find the product of the two matrices. (12.5)

$$\begin{bmatrix} -1 & 5 & 8 \end{bmatrix} \cdot \begin{bmatrix} 2 \\ -4 \\ 9 \end{bmatrix}$$

24. Find the inverse of the matrix. (12.6)

$$\begin{bmatrix} -1 & 0 \\ 3 & 11 \end{bmatrix}$$

25. Find the determinant of the matrix. (12.6)

$$\begin{bmatrix} 3 & -2 \\ -4 & -9 \end{bmatrix}$$

26. Solve the system of equations using an augmented matrix. (12.7)

$$14x - 3y = 19$$

$$7x - 10y = -16$$

27. Solve the system of equations using an augmented matrix. (12.7)

$$5x + 4y + 3z = 15$$

$$6x + y - 3z = 19$$

$$2x + 6y + z = -3$$