

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Probability and Statistics Matrices Midterm Review

Find the determinant of each matrix:

1.  $\begin{vmatrix} 3 & 8 \\ 4 & 5 \end{vmatrix}$

2.  $\begin{vmatrix} -6 & 5 \\ -4 & 9 \end{vmatrix}$

3.  $\begin{vmatrix} -7 & -3 \\ -2 & -6 \end{vmatrix}$

4.  $\begin{vmatrix} 5 & 10 \\ -6 & 8 \end{vmatrix}$

5.  $\begin{vmatrix} 5 & 3 & 3 \\ -4 & -5 & 1 \\ 5 & 3 & 0 \end{vmatrix}$

6.  $\begin{vmatrix} -2 & -5 & -4 \\ 0 & -3 & 5 \\ -5 & 5 & -6 \end{vmatrix}$

7.  $\begin{vmatrix} 3 & -2 & 1 \\ 3 & -1 & -2 \\ 3 & -2 & -3 \end{vmatrix}$

8.  $\begin{vmatrix} -3 & 2 & -3 \\ 0 & -1 & -1 \\ 3 & 0 & -3 \end{vmatrix}$

9.  $\begin{vmatrix} 5 & 5 & 0 \\ 2 & 3 & 3 \\ -4 & -6 & -5 \end{vmatrix}$

10.  $\begin{vmatrix} 2 & -1 & 0 \\ 4 & 0 & 1 \\ 4 & 6 & 5 \end{vmatrix}$

Find the inverse of each matrix:

11.  $\begin{bmatrix} 11 & -5 \\ 2 & -1 \end{bmatrix}$

12.  $\begin{bmatrix} 0 & -2 \\ -1 & -9 \end{bmatrix}$

13.  $\begin{bmatrix} -9 & -9 \\ -2 & -2 \end{bmatrix}$

14.  $\begin{bmatrix} -2 & 1 \\ -6 & 1 \end{bmatrix}$

15.  $\begin{bmatrix} 4 & -5 \\ -9 & 6 \end{bmatrix}$

16.  $\begin{bmatrix} 0 & 0 \\ -6 & 4 \end{bmatrix}$

17.  $\begin{bmatrix} 1 & -1 \\ -6 & -3 \end{bmatrix}$

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18.  $\begin{bmatrix} -1 & 7 \\ -1 & 7 \end{bmatrix}$

19.  $\begin{bmatrix} 3 & -2 \\ -4 & 6 \end{bmatrix}$

20.  $\begin{bmatrix} -6 & 11 \\ -4 & 7 \end{bmatrix}$

21.  $\begin{bmatrix} -9 & -6 \\ -5 & -4 \end{bmatrix}$

22.  $\begin{bmatrix} 5 & -8 \\ 6 & -9 \end{bmatrix}$

23.  $\begin{bmatrix} 2 & -10 \\ -11 & 8 \end{bmatrix}$

24.  $\begin{bmatrix} -2 & -2 \\ 6 & 8 \end{bmatrix}$

25.  $\begin{bmatrix} -2 & 2 \\ -9 & 8 \end{bmatrix}$

26.  $\begin{bmatrix} -3 & 3 \\ 8 & 7 \end{bmatrix}$

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### Probability and Statistics Arithmetic Sequences and Series Midterm Review

Find the  $n^{\text{th}}$  term of each arithmetic sequence:

1.  $a_1 = -5$

$$d = 4$$

$$n = 9$$

2.  $a_1 = 13$

$$d = \frac{-5}{2}$$

$$n = 29$$

3.  $a_1 = 3$

$$d = -4$$

$$n = 6$$

4.  $a_1 = -5$

$$d = \frac{-1}{2}$$

$$n = 10$$

5.  $a_{14}$  for  $a_1 = 4$  and  $d = 6$

6.  $a_{12}$  for  $a_1 = -4$  and  $d = -2$

7.  $a_{15}$  for  $a_1 = 5$  and  $d = -3$

8.  $a_{10}$  for 0, -3, -6, -9, ...

Complete the statement:

9. 97 is the \_\_\_\_\_th term of -3, 1, 5, 9, ...

10. 124 is the \_\_\_\_\_th term of -2, 5, 12, ...

11. -28 is the \_\_\_\_\_th term of 7, 2, -3, ...

Find the indicated term in each arithmetic sequence:

12.  $a_{15}$  for -3, 3, 9, ...

13.  $a_{19}$  for 17, 12, 7, ...

14.  $a_{10}$  for 8, 3, -2, ...

Find the missing terms in each arithmetic sequence:

15. \_\_\_\_\_, -10, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 14

16. 5, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, -3

17. 12, \_\_\_\_\_, 8, \_\_\_\_\_, 4, \_\_\_\_\_

Find  $S_n$  for each arithmetic series described:

18.  $a_1 = 16$

$$a_n = 98$$

$$n = 13$$

19.  $a_1 = 13$

$$d = -6$$

$$n = 21$$

20. 5, 7, 9, ... , 27

21. 89, 86, 83, ... , 20

22.  $\sum_{k=3}^{10} (5k - 10)$

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### Probability and Statistics Geometric Sequences and Series Midterm Review

Find the  $n^{\text{th}}$  term of each geometric sequence described:

1.  $a_1 = -10$

$$r = 4$$

$$n = 2$$

2.  $a_1 = 4$

$$r = 3$$

$$n = 9$$

3.  $a_3 = 9$

$$r = -3$$

$$n = 7$$

4.  $a_4 = 16$

$$r = 2$$

$$n = 10$$

5.  $a_4 = -54$

$$r = -3$$

$$n = 6$$

6.  $a_1 = 5$

$$r = 3$$

$$n = 4$$

7.  $a_1 = -4$

$$r = -2$$

$$n = 6$$

8.  $a_1 = 4$

$$r = 2$$

$$n = 3$$

9.  $a_1 = 2$

$$r = 2$$

$$n = 5$$

10.  $a_1 = 7$

$$r = 2$$

$$n = 4$$

Find the missing terms in each geometric sequence:

11. \_\_\_\_\_, \_\_\_\_\_, 2, \_\_\_\_\_, \_\_\_\_\_, 54

12. 8, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,  $\frac{1}{4}$

Find the sum ( $S_n$ ) of each geometric series:

13.  $6 + 18 + 54 + \dots$  for 6 terms

14.  $a_1 = 8$

$$r = -2$$

$$n = 7$$

15.  $a_1 = 2$

$$r = -3$$

$$a_5 = 162$$

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16.  $a_1 = \frac{2}{3}$

$r = 6$

$a_5 = 864$

17.  $160 + 80 + 40 + \dots n = 6$

18.  $a_1 = 5$

$r = -\frac{1}{2}$

$n = 7$

**Find  $a_1$  for each geometric series described:**

19.  $S_n = -55$

$r = -\frac{2}{3}$

$n = 5$

20.  $S_n = 2,457$

$r = -4$

$a_n = 3,075$

**Find the sum ( $S$ ) of each infinite geometric series, if it exists:**

21.  $a_1 = 35$

$r = \frac{2}{7}$

22.  $\frac{4}{25} + \frac{2}{5} + 1 + \dots$

23.  $a_1 = 42$

$r = \frac{6}{5}$

24.  $18 - 6 + 2 - \dots$

25.  $6 + 4 + \frac{8}{3} + \dots$

26.  $2 + 6 + 18 + \dots$

**Find  $a_1$  for each infinite geometric series described:**

27.  $S = 64$

$r = -\frac{3}{4}$

28.  $S = 625$

$r = \frac{1}{5}$

29.  $S = 90$

$r = -\frac{1}{2}$

30.  $S = 4$

$r = \frac{1}{3}$