FULL SAIL UNIVERSITY (/)

5.1 | Fundamentals : Sequences, Summations, and Matrices

12 FEB STATUS

Test in WEEK 3 : INTEGERS AND INDEXED STRUCTURES

1 Given the following sequence:

$\{a_k\} = 2, 3, 5, 6, 8, 9, \ldots$ for $k \geq 1$

What is a_3?

10 Points

- 3
- 5
- 6
- k

2 Given the following sequence:

$\{a_j\} = 1901, 1902, 1903, 1904, 1905, 1906, \ldots$ for $j \geq 1$

What is a_{20}?

10 Points

- 1919
- 1920
- 20
- 2019
- No way to figure it out

3 Given the following sequence:

$\{a_i\} = -8, -4, 0, 4, 8, 12, 16, 20, , \ldots$ for $i \geq 0$

What is the location of the term "12"?

10 Points

- 12
- 5
- 6
- i
- a

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4 Given $a_n = 4n + 5$, compute a_3.

10 Points

- $a_3 = 17$
- $a_3 = 3$
- $a_3 = 9$
- $a_3 = 19$

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5 Given the following sequence:

$-10, -7, -4, -1, 2, \ldots$

Identify the common difference.

10 Points

- -3
- 3
- 5

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6 Given the following sequence:

$4, -28, 196, -1372, \ldots$

Identify the common ratio.

10 Points

- 9604

- $-\frac{1}{7}$
- $\frac{1}{7}$
- -7
- 7

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7 Given $a_n = 2 \cdot (-3)^n$

Compute a_1

10 Points

- 2
- -6
- -12
- 1

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8 Given: $a_n = 3a_{n-1} + 1$ and $a_0 = 2$

Compute a_2

10 Points

- $a_2 = 6$
- $a_2 = 7$
- $a_2 = 22$
- $a_2 = 21$

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9 Given: $a_n = n^{n+1}$

Compute a_3

10 Points

- 28
- 81
- 16
- 27

10 Given the recurrence relation $a_n = -2a_{n-1}$ where $a_0 = -1$, find a_5

10 Points

- -64
- -16
- -4
- 32

11 Given the recurrence relation $a_n = a_{n-1} - a_{n-2}$ where $a_0 = 2,\ a_1 = 0$, find a_5

10 Points

- 2
- 0
- -3
- 4

12 Given the recurrence relation $a_n = 3(a_{n-1})^2$ where $a_0 = 1$, find a_3.

10 Points

- 3
- 27
- 14348907
- 2187

13 Given the recurrence relation: $a_n = 3a_{n-1}$ with initial condition $a_0 = 2$

Find the closed form of $\{a_n\}$

10 Points

- $a_n = 2n + 3$
- $a_n = 2 \cdot 3^n$
- $a_n = 3 \cdot 2^n$

- $a_n = 3n + 2$

14 Given the recurrence relation: $a_n = a_{n-1} + 2$, where $a_0 = 3$,

Find the closed form of $\{a_n\}$.

10 Points

- $a_n = 2n + 3$
- $a_n = 3n + 2$
- $a_n = 2(3)^n$
- $a_n = 3(2)^n$

15 Compute the sum:

$$\sum_{k=1}^{7}(k+1)$$

10 Points

- 27
- 28
- 35

16 Compute the sum:

$$\sum_{k=1}^{9}(3k-2)$$

10 Points

- 9
- 25
- 117
- 96

17 Compute the sum:

$$\sum_{i=0}^{10} 3$$

10 Points

- $\sum_{i=0}^{10} 3 = 30$
- $\sum_{i=0}^{10} 3 = 33$
- $\sum_{i=0}^{10} 3 = 3$
- $\sum_{i=0}^{10} 3 = 0$

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18 Given the following sequence $\{a_k\} = 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, \ldots$ starting at $a_0 = 1$

Calculate the following sum:

$$\sum_{i=1}^{8} a_i$$

10 Points

- 92
- 117
- 145
- 175
- 36

---

19 Compute the sum:

$$\sum_{i=1}^{3} \sum_{j=0}^{2} i + j$$

10 Points

- 21
- 27
- 3

20 Which formula gives the result for

$$\sum_{i=1}^{n} i$$

10 Points

- $n^2 + n + 1$
- $\frac{n^3-n^2}{2}$
- $\frac{n^2+n+1}{2}$
- $\frac{n^2+n}{2}$

21 Let

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ 10 & 11 & 12 \\ 13 & 14 & 15 \end{bmatrix}$$

How many columns does A have?

10 Points

- 2
- 3
- 4
- 5

22 Let

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ 10 & 11 & 12 \\ 13 & 14 & 15 \end{bmatrix}$$

How many rows does A have?

10 Points

- 2
- 3
- 4
- 5

---

23 Let

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ 10 & 11 & 12 \\ 13 & 14 & 15 \end{bmatrix}$$

What size is A?

10 Points

- 3x5
- 15
- 5x3

---

24 Let

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ 10 & 11 & 12 \\ 13 & 14 & 15 \end{bmatrix}$$

What is the second row of A?

10 Points

- $\begin{bmatrix} 2 \\ 5 \\ 8 \\ 11 \\ 14 \end{bmatrix}$
- $\begin{bmatrix} 4 & 5 & 6 \end{bmatrix}$
- $\begin{bmatrix} 13 & 14 & 15 \end{bmatrix}$

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25 Let

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ 10 & 11 & 12 \\ 13 & 14 & 15 \end{bmatrix}$$

What is the third column of A?

10 Points

- $\begin{bmatrix} 2 \\ 5 \\ 8 \\ 11 \\ 14 \end{bmatrix}$
- $\begin{bmatrix} 7 & 8 & 9 \end{bmatrix}$
- $\begin{bmatrix} 3 \\ 6 \\ 9 \\ 12 \\ 15 \end{bmatrix}$

26 Let A be a 3×4 matrix, B be a 4×5 matrix, and C be a 4×4 matrix.

If the following product is defined, select the size of the result. Otherwise, specify it is undefined.

$$CA$$

10 Points

- 3×4
- 3×5
- 4×5
- Undefined

---

27 Let A be a 3×4 matrix, B be a 4×5 matrix, and C be a 4×4 matrix.

If the following product is defined, select the size of the result. Otherwise, specify it is undefined.

$$AB$$

10 Points

- 3×4
- 3×5
- 4×5
- Undefined

---

28 Given $A = \begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 4 \\ 1 & 3 \end{bmatrix}$

Compute $A + B$

10 Points

- $A + B = \begin{bmatrix} 2 & 5 \\ 3 & 5 \end{bmatrix}$
- $A + B = \begin{bmatrix} 2 & 5 \\ 4 & 4 \end{bmatrix}$

- $A + B = \begin{bmatrix} 2 & 5 \\ 4 & 5 \end{bmatrix}$
- $A + B = \begin{bmatrix} 2 & 1 \\ 4 & 5 \end{bmatrix}$

29

Given $A = \begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 4 \\ 1 & 3 \end{bmatrix}$

Compute AB

10 Points

- $AB = \begin{bmatrix} 0 & 4 \\ 3 & 6 \end{bmatrix}$
- $AB = \begin{bmatrix} 12 & 8 \\ 11 & 7 \end{bmatrix}$
- $AB = \begin{bmatrix} 1 & 11 \\ 2 & 18 \end{bmatrix}$
- $AB = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

30

Let $A = \begin{bmatrix} 4 & -3 \\ 3 & -1 \\ 0 & -2 \\ -1 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 3 & 2 & -2 \\ 0 & -1 & 2 & -3 \end{bmatrix}$

Calculate the following

BA

10 Points

- $\begin{bmatrix} -4 & 9 & 0 & 2 \\ 0 & 1 & -4 & -15 \end{bmatrix}$
- $\begin{bmatrix} -4 & 0 \\ 9 & 1 \\ 0 & -4 \\ 2 & -15 \end{bmatrix}$

- $\begin{bmatrix} -4 & 15 & 2 & 1 \\ -3 & 10 & 4 & -3 \\ 0 & 2 & -4 & 6 \\ 1 & -8 & 8 & -13 \end{bmatrix}$
- $\begin{bmatrix} 7 & -14 \\ 0 & -18 \end{bmatrix}$
- Undefined

Submit

Comments