ALASKA PRECALCULUS · UNIT 4 · 25 QUESTIONS

Limits, Sequences, and Series — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 Find $\lim_{x \to 3} \frac{x^2 - 9}{x - 3}$.

- A 6
- B 3
- C 0
- D 9

Understand It with Pulse | Flag a mistake

2 Find $\lim_{x \to -2} \frac{x^2 - 4}{x + 2}$.

- A 2
- B -4
- C 4
- D -2

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3 The limit $\lim_{x \to 2} (3x + 5)$ is

A 6

B 10

C 11

D 1

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4 Find $\lim_{x \to \infty} \frac{1}{x}$.

A 1

B ∞

C -1

D 0

Understand It with Pulse | Flag a mistake

5 Find $\lim_{x \to \infty} \frac{2x^2 + 1}{x^2 - 3}$.

A 2

B 1

C -3

D 0

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6 Find $\lim_{x \to 2} \frac{x^3 - 8}{x - 2}$.

A 4

B 12

C 8

D 6

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7 Find $\lim_{x \to 4} \frac{\sqrt{x} - 2}{x - 4}$.

A 2

B 4

C $\frac{1}{4}$

D $\frac{1}{2}$

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8 **An arithmetic sequence has $a_1 = 3$ and common difference 4. The term a_{10} is**



A 43

B 40

C 37

D 39

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9 **A geometric sequence has $a_1 = 2$ and common ratio 3. The term a_5 is**

- A 162
- B 54
- C 81
- D 486

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10 **The sum of the first 10 terms of 2, 5, 8, … is**



A 145

B 155

C 165

D 290

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11 The sum $3 + 6 + 12 + 24$ is

- A 42
- B 48
- C 45
- D 36

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12 The sum of the infinite geometric series $12 + 4 + \frac{4}{3} + cdots$ is

- A 16
- B 24
- C 36
- D 18

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13 **The infinite geometric series with $a_1 = 5$ and $r = 2$**

A converges to 10

B converges to 5

C diverges

D converges to -5

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14 **A sequence is defined by $a_1 = 5$ and $a_{n+1} = 2a_n + 1$. The term a_3 is**



A 11

B 23

C 21

D 13

Understand It with Pulse | Flag a mistake

15 For $a_n = 3n - 2$, the term a_{20} is

- A 60
- B 62
- C 58
- D 56

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16 The sum $\sum_{k=1}^{4} 2k$ is

- A 20
- B 16
- C 10
- D 8

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17 The sum $\sum_{k=1}^{3} k^2$ is

- **A** 9
- **B** 14
- **C** 36
- **D** 5

Understand It with Pulse | Flag a mistake

18 Find $\lim_{x \to \infty} \frac{5x - 1}{2x + 3}$.

- **A** 5
- **B** $\frac{5}{2}$
- **C** 2
- **D** $\frac{2}{5}$

Understand It with Pulse | Flag a mistake

19 Find $\lim_{x \to 0} \frac{x^2 + 3x}{x}$.

A 0

B 1

C 3

D 4

Understand It with Pulse | Flag a mistake

20 An arithmetic sequence has $a_1 = 7$ and common difference -2. The term a_8 equals

ANSWER _____

Understand It with Pulse | Flag a mistake

21 A geometric sequence has $a_1 = 5$ and common ratio 2. The term a_4 equals

ANSWER _____

Understand It with Pulse | Flag a mistake

22 **The sum of the first 4 terms of a geometric sequence with $a_1 = 1$ and $r = 5$ equals**



ANSWER

Understand It with Pulse | Flag a mistake

23 The limit of the sequence $1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \ldots$ is

- **A** 1
- **B** ∞
- **C** $\frac{1}{2}$
- **D** 0

Understand It with Pulse | Flag a mistake

24 The sequence $(\frac{1}{2})^n$ as $n \to \infty$

- **A** diverges
- **B** converges to 1
- **C** oscillates
- **D** converges to 0

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25 **The sum of the infinite geometric series 8 + 4 + 2 + cdots is**



A 16

B 12

C 14

D 24

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ANSWER KEY

1.	A	**10.**	B	**19.**	C
2.	B	**11.**	C	**20.**	-7
3.	C	**12.**	D	**21.**	40
4.	D	**13.**	C	**22.**	156
5.	A	**14.**	B	**23.**	D
6.	B	**15.**	C	**24.**	D
7.	C	**16.**	A	**25.**	A
8.	D	**17.**	B		
9.	A	**18.**	B		

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