ALASKA PRECALCULUS · FINAL EXAM · 50 QUESTIONS

Final Exam — 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 **If g(x) = 5 - 3x, then g(-2) is**

- A -1
- B 11
- C 1
- D -11

Understand It with Pulse | Flag a mistake

2 The value of $\cos \frac{2\pi}{3}$ is

A $\frac{1}{2}$

B $-\frac{1}{2}$

C $\frac{\sqrt{3}}{2}$

D $-\frac{\sqrt{3}}{2}$

Understand It with Pulse | Flag a mistake

3 The parabola $y = 3x^2 - 2$ opens

A downward

B upward

C to the right

D to the left

Understand It with Pulse | Flag a mistake

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

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

Understand It with Pulse | Flag a mistake

5 The domain of f(x) = 1/x + 5 is

- **A** all real numbers
- **B** $x \neq 5$
- **C** $x \geq -5$
- **D** $x \neq -5$

Understand It with Pulse | Flag a mistake

6 **An angle of $\frac{3\pi}{4}$ radians in degrees is**

A 120°

B 150°

C 135°

D 45°

Understand It with Pulse | Flag a mistake

7 **The focus of $(x - 2)^2 = 12(y + 1)$ is**

A (2, 2)

B (2, -4)

C (5, -1)

D (-1, -1)

Understand It with Pulse | Flag a mistake

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

A 4

B 12

C 8

D 6

Understand It with Pulse | Flag a mistake

9 If f(x) = 2x + 5 and g(x) = x², then g(f(1)) is

A 19

B 49

C 14

D 25

Understand It with Pulse | Flag a mistake

10 For any angle x, $\sin^2 x$ equals

- A $1 + \cos^2 x$
- B $1 - \cos^2 x$
- C $\cos^2 x - 1$
- D $1 + \tan^2 x$

Understand It with Pulse | Flag a mistake

11 The radius of $(x + 1)^2 + (y - 3)^2 = 36$ is

- A 36
- B 18
- C 6
- D 12

Understand It with Pulse | Flag a mistake

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

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

Understand It with Pulse | Flag a mistake

13 If f(x) = x - 3 and g(x) = 3x, then f(g(4)) is

- A 12
- B 15
- C 9
- D 1

Understand It with Pulse | Flag a mistake

14 The period of $y = \sin 2x$ is

- **A** 2π
- **B** $\frac{\pi}{2}$
- **C** π
- **D** 4π

Understand It with Pulse | Flag a mistake

15 For $\frac{x^2}{49} + \frac{y^2}{16} = 1$, the foci are

- **A** $(\pm\sqrt{33}, 0)$
- **B** $(\pm 7, 0)$
- **C** $(0, \pm\sqrt{33})$
- **D** $(\pm 4, 0)$

Understand It with Pulse | Flag a mistake

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

A 16

B 24

C 36

D 18

Understand It with Pulse | Flag a mistake

17 **The graph of $y = f(x + 5) - 2$ is the graph of $y = f(x)$ shifted**

A 5 units right and 2 units up

B 5 units left and 2 units down

C 2 units left and 5 units down

D 5 units right and 2 units down

Understand It with Pulse | Flag a mistake

18 The graph shows $y = 3 \cos x$. The point marked P is a maximum point with coordinates

- A (0, 3)
- B (0, -3)
- C (π, 3)
- D (0, 1)

Understand It with Pulse | Flag a mistake

19 The vertices of $\frac{y^2}{36} - \frac{x^2}{9} = 1$ are

- A (± 3, 0)
- B (0, ± 3)
- C (± 6, 0)
- D (0, ± 6)

Understand It with Pulse | Flag a mistake

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

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

Understand It with Pulse | Flag a mistake

21 **The graph shows the parabola $y = (x + 1)^2 - 2$. The vertex is**

- A (1, -2)
- B (-1, 2)
- C (-1, -2)
- D (1, 2)

Understand It with Pulse | Flag a mistake

22 **In a triangle, A = 30°, B = 60°, a = 10. Using the law of sines, b is**

- **A** 20
- **B** $\frac{10}{\sqrt{3}}$
- **C** $5\sqrt{3}$
- **D** $10\sqrt{3}$

Understand It with Pulse | Flag a mistake

23 **The midpoint of (1, 5) and (7, 3) is**

- **A** (4, 4)
- **B** (3, 4)
- **C** (4, 8)
- **D** (8, 8)

Understand It with Pulse | Flag a mistake

24 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

25 The x-intercept of f(x) = 4x + 20 equals

ANSWER _____

Understand It with Pulse | Flag a mistake

26 The value of cos 180° equals

ANSWER _____

Understand It with Pulse | Flag a mistake

27 **The radius of $(x + 5)^2 + y^2 = 49$ equals**

ANSWER _____

Understand It with Pulse | Flag a mistake

28 **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

29 **The graph of $y = f(x) + 4$ is the graph of $y = f(x)$ shifted**

A 4 units down

B 4 units left

C 4 units right

D 4 units up

Understand It with Pulse | Flag a mistake

30 For an angle where $\cos x \neq 0$, $\tan x$ equals

A $\frac{\cos x}{\sin x}$

B $\frac{1}{\cos x}$

C $\sin x \cos x$

D $\frac{\sin x}{\cos x}$

Understand It with Pulse | Flag a mistake

31 The vertex of $y = -(x - 5)^2 - 1$ is

A (5, -1)

B (-5, -1)

C (5, 1)

D (-5, 1)

Understand It with Pulse | Flag a mistake

32 Find $\lim_{x \to 5} \frac{x^2 - 25}{x - 5}$.

A 10

B 5

C 0

D 25

Understand It with Pulse | Flag a mistake

33 If g(x) = 4x + 7, then g(-1) is

A 11

B 3

C -3

D 7

Understand It with Pulse | Flag a mistake

34 The value of $\cos \frac{\pi}{6}$ is

A $\frac{1}{2}$

B $\frac{\sqrt{3}}{2}$

C $-\frac{1}{2}$

D 1

Understand It with Pulse | Flag a mistake

35 The center of $x^2 + (y + 4)^2 = 16$ is

A (0, 4)

B (4, 0)

C (-4, 0)

D (0, -4)

Understand It with Pulse | Flag a mistake

36 **An arithmetic sequence has $a_1 = 10$ and common difference -3. The term a_7 is**

- **A** -11
- **B** 31
- **C** -8
- **D** 28

Understand It with Pulse | Flag a mistake

37 **The range of $f(x) = -x^2 + 5$ is**

- **A** $y \leq 5$
- **B** $y \geq 5$
- **C** $y < 5$
- **D** $y \geq 0$

Understand It with Pulse | Flag a mistake

38 An angle of $\frac{5\pi}{6}$ radians in degrees is

- A 120°
- B 135°
- C 150°
- D 210°

Understand It with Pulse | Flag a mistake

39 For $\frac{x^2}{36} + \frac{y^2}{20} = 1$, the eccentricity is

- A $\frac{4}{6}$
- B $\frac{5}{6}$
- C $\frac{2}{3}$
- D $\frac{20}{36}$

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40 The sum of the infinite geometric series 20 + 10 + 5 + cdots is

- A 30
- B 35
- C 40
- D 25

Understand It with Pulse | Flag a mistake

41 The vertex of $y = -(x - 2)^2 + 6$ is

- A (-2, 6)
- B (2, -6)
- C (-2, -6)
- D (2, 6)

Understand It with Pulse | Flag a mistake

42 The amplitude of $y = 2 \cos 3x + 1$ is

A 3

B 2

C 1

D 6

Understand It with Pulse | Flag a mistake

43 The midpoint of (0, 4) and (6, 10) is

A (3, 7)

B (6, 6)

C (3, 14)

D (6, 14)

Understand It with Pulse | Flag a mistake

44 The limit $\lim_{x \to \infty} \frac{2x + 9}{x - 1}$ equals

ANSWER _____

Understand It with Pulse | Flag a mistake

45 If f(x) = 3x - 8, then the value of x for which f(x) = 10 equals

ANSWER _____

Understand It with Pulse | Flag a mistake

46 In a triangle, A = 30°, B = 45°, a = 12. Using the law of sines, b is

A $12\sqrt{2}$

B 24

C $6\sqrt{2}$

D 12

Understand It with Pulse | Flag a mistake

47 The equation $x^2 + y^2 - 6x + 4y - 12 = 0$ represents a

- **A** parabola
- **B** ellipse
- **C** hyperbola
- **D** circle

Understand It with Pulse | Flag a mistake

48 Find $\lim_{x \to \infty} \frac{3x + 2}{6x - 1}$.

- **A** $\frac{1}{2}$
- **B** 3
- **C** 2
- **D** $\frac{1}{3}$

Understand It with Pulse | Flag a mistake

49 The x-intercept of f(x) = 2x - 6 is

- A -3
- B 6
- C 3
- D -6

Understand It with Pulse | Flag a mistake

50 For any angle x, cos(-x) equals

- A -cos x
- B sin x
- C -sin x
- D cos x

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ANSWER KEY

1.	B	**18.**	A	**35.**	D
2.	B	**19.**	D	**36.**	C
3.	B	**20.**	A	**37.**	A
4.	B	**21.**	C	**38.**	C
5.	D	**22.**	D	**39.**	C
6.	C	**23.**	A	**40.**	C
7.	A	**24.**	C	**41.**	D
8.	B	**25.**	-5	**42.**	B
9.	B	**26.**	-1	**43.**	A
10.	B	**27.**	7	**44.**	2
11.	C	**28.**	156	**45.**	6
12.	A	**29.**	D	**46.**	A
13.	C	**30.**	D	**47.**	D
14.	C	**31.**	A	**48.**	A
15.	A	**32.**	A	**49.**	C
16.	D	**33.**	B	**50.**	D
17.	B	**34.**	B		

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