SOUTH DAKOTA 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 f(x) = x + 4 and g(x) = 2x, then f(g(3)) is

- A 6
- B 7
- C 10
- D 14

Understand It with Pulse | Flag a mistake

**2** The smallest nonnegative solution of $\sin x = \frac{1}{2}$ is

- A π/3
- B 5π/6
- C π/2
- D π/6

Understand It with Pulse | Flag a mistake

3 **The transverse axis length of $x^2/16 - y^2/9 = 1$ is**

- A 3
- B 4
- C 6
- D 8

Understand It with Pulse | Flag a mistake

4 **Find $\lim_{x \to 2} x^2 - 4/x - 2.$**

- A 2
- B 3
- C 4
- D 0

Understand It with Pulse | Flag a mistake

**5** If $f(x) = x^2$ and $g(x) = f(x + 2)$, then $g(-1)$ is

- A 9
- B 4
- C 1
- D 3

Understand It with Pulse | Flag a mistake

**6** The value of $\tan 45°$ is

- A 0
- B $\frac{1}{2}$
- C 1
- D $\sqrt{3}$

Understand It with Pulse | Flag a mistake

**7** The focus of $(x - 1)^2 = 8(y - 2)$ is

- A (1, 4)
- B (1, 0)
- C (3, 2)
- D (-1, 2)

Understand It with Pulse | Flag a mistake

**8** Find $\lim_{x \to \infty} 3x^2/x^2 + 1.$

- A 0
- B 1
- C ∞
- D 3

Understand It with Pulse | Flag a mistake

**9** **The inverse of f(x) = 2x + 6 is**

- **A** $f^{-1}(x) = x - 6/2$
- **B** $f^{-1}(x) = x + 6/2$
- **C** $f^{-1}(x) = 2x - 6$
- **D** $f^{-1}(x) = x/2 + 6$

Understand It with Pulse | Flag a mistake

**10** **If $\sin\theta = \frac{3}{5}$ and $\theta$ is in Quadrant I, then $\cos\theta$ is**

- **A** $\frac{4}{5}$
- **B** -4/5
- **C** $\frac{3}{4}$
- **D** $\frac{5}{4}$

Understand It with Pulse | Flag a mistake

**11** The radius of $(x - 3)^2 + (y + 2)^2 = 25$ is

- A 25
- B 5
- C 10
- D $\sqrt{5}$

Understand It with Pulse | Flag a mistake

**12** The function $f(x) = x^2 - 1/x - 1$ has a removable discontinuity at

- A $x = 0$
- B $x = 1$
- C $x = -1$
- D no value

Understand It with Pulse | Flag a mistake

**13** **The function $f(x) = x^2 + 5$ is**

- A odd
- B neither even nor odd
- C even
- D both even and odd

Understand It with Pulse | Flag a mistake

**14** **The value of sec 60° is**

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

Understand It with Pulse | Flag a mistake

**15** For $x^2/25 + y^2/9 = 1$, the foci are

- A (± 4, 0)
- B (± 3, 0)
- C (± 5, 0)
- D (0, ± 4)

Understand It with Pulse | Flag a mistake

**16** In an arithmetic sequence with $a_1 = 3$ and common difference 4, the tenth term is

- A 35
- B 39
- C 43
- D 40

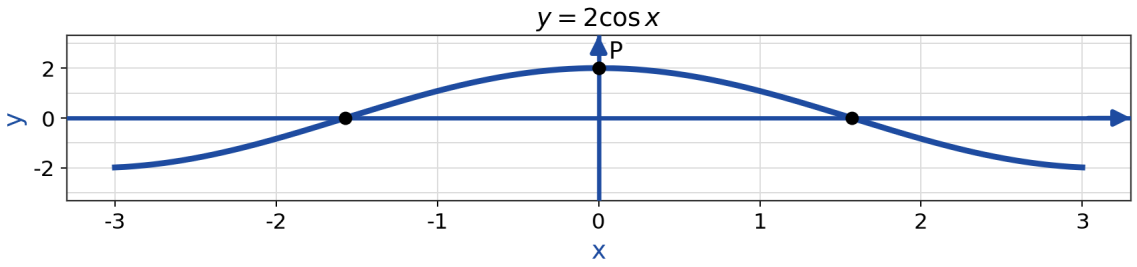
Understand It with Pulse | Flag a mistake

**17** The range of $f(x) = x^2 + 2$ is

- **A** $y \geq 0$
- **B** $y > 2$
- **C** $y \geq 2$
- **D** $y \leq 2$

Understand It with Pulse | Flag a mistake

**18** The graph shows $y = 2 \cos x$. The value of y when x = 0 is




- **A** 0
- **B** 1
- **C** 2
- **D** -2

Understand It with Pulse | Flag a mistake

**19** The vertices of $y^2/25 - x^2/16 = 1$ are

- A (± 4, 0)
- B (0, ± 4)
- C (± 5, 0)
- D (0, ± 5)

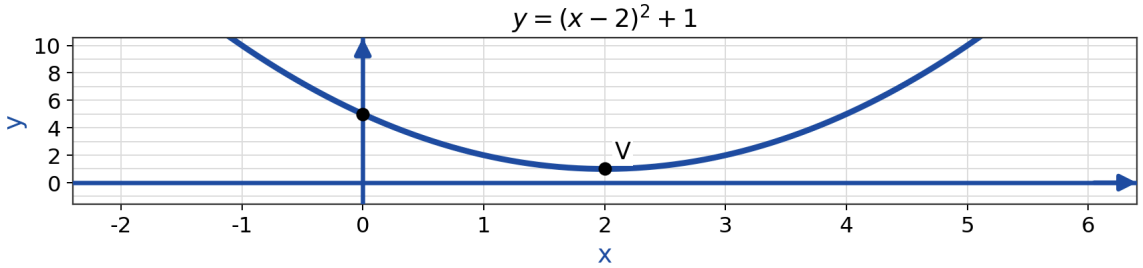
Understand It with Pulse | Flag a mistake

**20** The sum of the infinite geometric series with $a_1 = 12$ and $r = \frac{1}{3}$ is

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

Understand It with Pulse | Flag a mistake

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




A (2, 1)

B (-2, 1)

C (2, -1)

D (1, 2)

Understand It with Pulse | Flag a mistake

**22** **The value of $\sin^{-1}\frac{1}{2}$ is**

A π/6

B π/3

C 5π/6

D -π/6

Understand It with Pulse | Flag a mistake

**23** The midpoint of (2, 3) and (6, 7) is

- A (4, 5)
- B (3, 5)
- C (4, 10)
- D (8, 10)

Understand It with Pulse | Flag a mistake

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

- A 16
- B 18
- C 20
- D 24

Understand It with Pulse | Flag a mistake

**25** The x-intercept of f(x) = 3x - 12 is

- A -4
- B 12
- C -12
- D 4

Understand It with Pulse | Flag a mistake

**26** The value of sin 30° is

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

Understand It with Pulse | Flag a mistake

27 **The radius of $(x - 2)^2 + y^2 = 9$ is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

28 **The sequence 4, 12, 36, 108 has common ratio**

A 2

B 3

C 4

D 8

Understand It with Pulse | Flag a mistake

29 **The inverse of f(x) = x/3 - 2 is**

A $f^{-1}(x) = 3x - 2$

B $f^{-1}(x) = x/3 + 2$

C $f^{-1}(x) = 3x + 6$

D $f^{-1}(x) = 3x - 6$

Understand It with Pulse | Flag a mistake

30 **The value of sin 90° is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

**31** The vertex of $y = x^2 - 6x + 5$ is

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

Understand It with Pulse | Flag a mistake

**32** Find $\lim_{x \to 5} (x^2 - 4)$.

- A 21
- B 25
- C 20
- D 29

Understand It with Pulse | Flag a mistake

**33** The domain of $f(x) = \sqrt{2x + 6}$ is

- **A** $x \geq -3$
- **B** $x > -3$
- **C** $x \leq -3$
- **D** $x \geq 3$

Understand It with Pulse | Flag a mistake

**34** The value of cos 60° is

- **A** $\sqrt{\frac{3}{2}}$
- **B** $\frac{1}{2}$
- **C** 1
- **D** 0

Understand It with Pulse | Flag a mistake

**35** The center of $(x + 1)^2 + (y - 4)^2 = 16$ is

- A (1, 4)
- B (-1, 4)
- C (1, -4)
- D (-1, -4)

Understand It with Pulse | Flag a mistake

**36** Find $\lim_{x \to \infty} 2x + 1/x + 3.$

- A 0
- B 1
- C 2
- D 3

Understand It with Pulse | Flag a mistake

**37** **The inverse of f(x) = 5x - 10 is**

- A $f^{-1}(x) = x + 10/5$
- B $f^{-1}(x) = x - 10/5$
- C $f^{-1}(x) = 5x + 10$
- D $f^{-1}(x) = x/5 - 10$

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**38** **The reference angle for 315° is**

- A 45°
- B 135°
- C 15°
- D 75°

Understand It with Pulse | Flag a mistake

**39** For $x^2/16 + y^2/25 = 1$, the foci are

- A $(\pm 3, 0)$
- B $(0, \pm 3)$
- C $(0, \pm 4)$
- D $(\pm 4, 0)$

Understand It with Pulse | Flag a mistake

**40** The sum of the first 5 terms of an arithmetic sequence with $a_1 = 1$ and common difference 2 is

- A 20
- B 25
- C 30
- D 15

Understand It with Pulse | Flag a mistake

**41** **The graph of y = f(-x) is the graph of y = f(x) reflected across the**

- A x-axis
- B line y = x
- C y-axis
- D origin

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**42** **The amplitude of y = 3 cos x + 1 is**

- A 1
- B 3
- C 4
- D 2

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**43** **The equation $x^2/9 - y^2/4 = 1$ represents a**

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

Understand It with Pulse | Flag a mistake

**44** **The sequence 2, 6, 18, 54 has common ratio**

- A 2
- B 3
- C 4
- D 6

Understand It with Pulse | Flag a mistake

**45** The function $f(x) = x^4 + 2x^2$ is

- **A** odd
- **B** neither even nor odd
- **C** linear
- **D** even

Understand It with Pulse | Flag a mistake

**46** If $\cos\theta = \frac{4}{5}$ and $\sin\theta = \frac{3}{5}$, then $\cos 2\theta$ is

- **A** $\frac{7}{25}$
- **B** $\frac{24}{25}$
- **C** $\frac{16}{25}$
- **D** $\frac{9}{25}$

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47 **The value of p for $x^2 = 12y$ is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

48 **For $a_n = n^2 + 2n$, the fourth term is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

49 **If $f(x) = x^2 - 4x$, then $f(6) - f(2)$ is**

A 8

B 12

C 20

D 16

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**50** **The value of sin 270° is**

A 1

B 0

C $\frac{1}{2}$

D -1

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# ANSWER KEY

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

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