NORTH DAKOTA ALGEBRA 2 · UNIT 3 · 25 QUESTIONS

Exponential, Logarithmic, and Trigonometric Functions — 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 The value of 3^4 is

- **A** 81
- **B** 64
- **C** 27
- **D** 12

Understand It with Pulse | Flag a mistake

2 **The value of $\log_3 81$ is**

A 9

B 4

C 27

D 3

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3 **The value of $\log_2 (8 \cdot 4)$ is**

ANSWER _____

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4 **An expanded form of $\log(x^2 y)$ is**

- **A** $2\log x - \log y$
- **B** $\log x \cdot \log y$
- **C** $2\log x + \log y$
- **D** $\log x + 2\log y$

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5 **The expression $2\log x - \log y$ is equivalent to**

- **A** $\log(2x - y)$
- **B** $\log(x^2 + y)$
- **C** $\log\left(\frac{x^2}{y}\right)$
- **D** $\log\left(\frac{x}{y^2}\right)$

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6 The solution of $\log_2 x = 4$ is

- A 8
- B 16
- C 2
- D 64

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7 The solution of $2^x = 64$ is

- A 6
- B 32
- C 5
- D 8

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8 **A population of 500 doubles every year. After 3 years, the population is**

ANSWER

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9 **A sample of 800 grams has a half-life of 10 years. After 20 years, the mass remaining, in grams, is**

A 100

B 600

C 400

D 200

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10 The exact value of $\sin(\pi/6)$ is

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

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11 The exact value of $\cos(\pi/3)$ is

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

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12 The exact value of $\tan(\pi/4)$ is

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

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13 An angle of 120°, in radians, is

- A $3\pi/4$
- B $\pi/3$
- C $2\pi/3$
- D $5\pi/6$

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14 **A sector has radius 6 and central angle 2 radians. Its arc length is**

- A 36
- B 3
- C 8
- D 12

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15 **The period of y = sin(2x) is**

- A 2π
- B π
- C $\pi/2$
- D 4π

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16 The amplitude of y = 3cos x + 1 is

A 4

B 3

C 2

D 1

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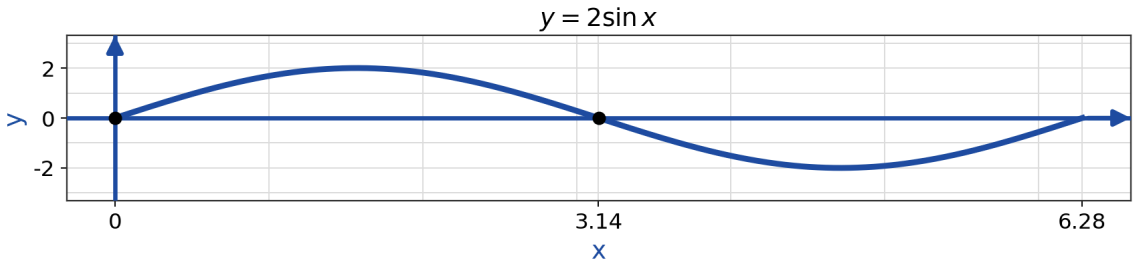
17 The graph below shows y = 2sin x. The amplitude of the function is



A 3

B π

C 1

D 2

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18 Using $\sin^2 x + \cos^2 x = 1$, an expression for $\sin^2 x$ is

A $1/\cos^2 x$

B $1 + \cos^2 x$

C $\cos^2 x - 1$

D $1 - \cos^2 x$

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19 The number of solutions of $\sin x = \frac{1}{2}$ on $0 \leq x < 2\pi$ is

ANSWER _____

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20 The smallest positive solution of 2cos x - 1 = 0 is

- A π/6
- B π/3
- C 2π/3
- D 5π/6

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21 The solution of log x + log(x - 1) = log 6, for x > 1, is

- A x = -2
- B x = 3
- C x = 6
- D x = 2

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22 **An item worth 20000 dollars loses 10% of its value each year. After 2 years, its value, in dollars, is**

ANSWER _____

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23 **The value of $\ln e^3$ is**

A 3

B 1

C e

D e^3

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24 The value of $\log_5 125$ is

- A 15
- B 25
- C 5
- D 3

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25 If $\sin\theta < 0$ and $\cos\theta > 0$, then θ is in Quadrant

- A I
- B II
- C III
- D IV

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ANSWER KEY

1. A
2. B
3. 5
4. C
5. C
6. B
7. A
8. 4000
9. D
10. C
11. A
12. C
13. C
14. D
15. B
16. B
17. D
18. D
19. 2
20. B
21. B
22. 16200
23. A
24. D
25. D

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