ALBERTA MATH 30-2 · UNIT 6 · 25 QUESTIONS

Exponential and Logarithmic 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 $\log_3 81$ is

- A 3
- B 4
- C 9
- D 27

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2 **Written in exponential form, $\log_5 125 = 3$ is equivalent to**

- **A** $5^3 = 125$
- **B** $3^5 = 125$
- **C** $5^{125} = 3$
- **D** $125^3 = 5$

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3 **A bacterial culture starts with 500 bacteria and doubles every hour. The number of bacteria after 4 hours is**

- **A** 2000
- **B** 4000
- **C** 8000
- **D** 16000

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4 **The graph below shows an exponential function. The y-intercept of the graph is**

- **A** 0
- **B** 1
- **C** 3
- **D** 9

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5 **The graph below shows an exponential function. The equation of the horizontal asymptote of the graph is**

- **A** y = 0
- **B** x = 5
- **C** y = 5
- **D** y = 2

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6 **An investment of $2000 earns 4% interest, compounded annually. The value of the investment after 3 years is**

A $2240.00

B $2249.73

C $2160.00

D $2080.00

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7 **The solution to the equation $2^{x+1} = 32$ is**

A x = 3

B x = 5

C x = 2

D x = 4

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8 **A car purchased for $28000 depreciates by 12% each year. The value of the car after 2 years is**

A $21683.20

B $24640.00

C $21280.00

D $19072.51

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9 **A radioactive substance has a half-life of 5 days. A sample starts with a mass of 640 g. The mass remaining after 15 days, in grams, is _____ Record your answer as a whole number.**

ANSWER _____

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10 **The graph below shows a logarithmic function. The domain of the function is**

- **A** all real numbers
- **B** $x \geq 0$
- **C** $x < 0$
- **D** $x > 0$

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11 **The value of $\log_2(\frac{1}{8})$ is**

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

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12 If $\log_4 x = 3$, then the value of x is

A 12

B 81

C 64

D 7

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13 The population of a town is modelled by $P(t) = 12000(1.02)^t$, where t is the number of years. The population of the town after 10 years, to the nearest person, is

A 12240

B 14400

C 15600

D 14628

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14 **The value of x in the equation $3^{2x} = 81$ is _____ Record your answer as a whole number.**

ANSWER _____

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15 **The graph below shows an exponential function. The graph is best described as**

A Increasing, with a y-intercept of 3

B Decreasing, with a y-intercept of 1

C Decreasing, with a y-intercept of 3

D Increasing, with a y-intercept of 1

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16 **An investment of $5000 earns 6% interest, compounded semi-annually. The value of the investment after 2 years is**

A $5627.54

B $5618.00

C $5600.00

D $5300.00

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17 **A sample of a radioactive isotope has a half-life of 8 hours. The percent of the original sample remaining after 24 hours, to the nearest tenth, is _____ Record your answer as a percent, to the nearest tenth.**

ANSWER _____

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18 **The graph below shows a logarithmic function. The x-intercept of the graph is**

- **A** 3
- **B** 5
- **C** 4
- **D** 13

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19 **The value of x in the equation $4^{x-2} = 64$ is _____ Record your answer as a whole number.**

ANSWER _____

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20 **An investment grows according to $A(t) = 1500(1.05)^t$, where t is the number of years. The value of the investment after 6 years, to the nearest dollar, is _____ Record your answer to the nearest dollar.**

ANSWER _____

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21 **Which of the following functions represents exponential decay?**

A $y = (1.04)^x$

B $y = 2^x$

C $y = (0.85)^x$

D $y = x^2$

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22 **Written in logarithmic form, $7^2 = 49$ is equivalent to**

A $\log_{49} 7 = 2$

B $\log_2 49 = 7$

C $\log_7 2 = 49$

D $\log_7 49 = 2$

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23 If $\log_5(x + 1) = 2$, then the value of x is _____ Record your answer as a whole number.

ANSWER _____

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24 A bacterial culture is modelled by $P(t) = 250(2)^{t/3}$, where t is the time, in hours. The initial population and the doubling period of the culture are

A. Initial population: 250 Doubling period: 3 h

B. Initial population: 250 Doubling period: 2 h

C. Initial population: 3 Doubling period: 250 h

D. Initial population: 750 Doubling period: 3 h

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25 The population of a city is 85000 and grows by 1.5% each year. The population of the city after 8 years, to the nearest hundred, is _____ Record your answer to the nearest hundred.

ANSWER _____

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ANSWER KEY

1. B
2. A
3. C
4. B
5. C
6. B
7. D
8. A
9. 80
10. D
11. A
12. C
13. D
14. 2
15. B
16. A
17. 12.5
18. B
19. 5
20. 2010
21. C
22. D
23. 24
24. A
25. 95800

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