

Brett Robbins Academic Consulting

Math 30-1 Practice Test

Exponential & Logarithmic Functions

10 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

The logarithmic form of the equation $4^{3/2} = 8$ is

A) $\log_4 8 = \frac{3}{2}$

B) $\log_8 4 = \frac{3}{2}$

C) $\log_4 \frac{3}{2} = 8$

D) $\log_8 \frac{3}{2} = 4$

Question 2

The value of $\log_5 \left(\frac{1}{125} \right)$ is

A) 3

B) -3

C) $-\frac{1}{3}$

D) $\frac{1}{3}$

Question 3

The expression $\log_5 \left(\frac{25a^2}{b} \right)$, where $a, b > 0$, expanded fully, is

A) $25 + 2\log_5 a - \log_5 b$

B) $2 + 2\log_5 a - \log_5 b$

C) $2 + \log_5 a - \log_5 b$

D) $2 + 2\log_5 a + \log_5 b$

Question 4

The solution to the equation $3^{x+1} = 27^{x-2}$ is

A) $\frac{5}{2}$

B) 3

C) $\frac{7}{2}$

D) $-\frac{5}{2}$

Question 5

The equation of the horizontal asymptote of the graph of $y = 2^{x-3} + 1$ is

- A) $y = 1$
B) $y = 3$
C) $y = 0$
D) $x = 3$

Question 6

The expression $\log x + 2\log y - \frac{1}{3}\log z$, where $x, y, z > 0$, written as a single logarithm, is

- A) $\log\left(\frac{2xy}{3z}\right)$
 B) $\log(xy^2z^{1/3})$
 C) $\log\left(\frac{xy^2}{z^3}\right)$
 D) $\log\left(\frac{xy^2}{z^{1/3}}\right)$

Question 7

The value of $\frac{\log_4 9}{\log_4 3}$ is

- A) 3
B) 2
C) 6
D) $\frac{1}{2}$

Question 8

The solution to the equation $\log_2 x + \log_2 (x - 2) = 3$ is

- A) $x = -2$
B) $x = 4$ and $x = -2$
C) $x = 4$
D) $x = 8$

Question 9

A culture of bacteria starts with 500 bacteria and doubles every 3 hours.

The number of bacteria after 15 hours is

- | | |
|-----------|-----------|
| A) 16 000 | B) 8 000 |
| C) 2 500 | D) 32 000 |

Question 10

The equation of the vertical asymptote of the graph of $y = \log_5(x + 2) - 1$ is

- | | |
|-------------|-------------|
| A) $x = 2$ | B) $x = 0$ |
| C) $x = -1$ | D) $x = -2$ |

Answer Key

- | | | |
|------|------|-------|
| 1. A | 5. A | 9. A |
| 2. B | 6. D | 10. D |
| 3. B | 7. B | |
| 4. C | 8. C | |

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