

Practice Test for Exponential and Logarithmic Functions Unit

Learning Objectives:

- A. Simplify rational exponents.
- B. Rewrite a root as a rational exponent.
- C. Use rational exponents to rewrite an expression in simplest radical form.
- D. Simplify real number exponents
- E. Solve an equation with rational exponents.
- F. Write a function to model an exponential situation.
- G. Use an exponential model to answer questions about a real life situation.
- H. Identify the major features of an exponential graph: y-intercept, asymptote, domain and range.
- I. Graph an exponential growth or decay function.
- J. Use transformations to sketch the graph of an exponential function.
- K. Identify how the base of an exponential function affects the shape of the graph.
- L. Transform a logarithm to an exponent and an exponent to a logarithm.
- M. Simplify a logarithm.
- N. Solve an exponential equation by converting it into a logarithm.
- O. Solve a logarithmic equation by converting it into an exponent.
- P. Identify the major features of an logarithmic graph: x-intercept, asymptote, domain and range.
- Q. Graph a logarithmic function.
- R. Use the compound interest formula to answer questions about interest.
- S. Use the continuous growth or decay function to model a real life situation.

Question #	Learning Objective	Know It	Feel Unsure	Right	Wrong	Simple Mistake	Need to Study
1	A						
2	B						
3	C						
4	D						
5	E						
6	E						
7	F						
8	G						
9	H, I						
10	H, I						
11	J						
12	K						
13	L						
14	M						
15	N						
16	O						
17	P, Q						
18	R						
19	S						

1. Simplify: $32^{-\frac{4}{5}}$
2. Rewrite as an exponent: $\sqrt[4]{2x^6y^8}$
3. Rewrite in simplest radical form: $\sqrt[4]{27} \cdot \sqrt[3]{81}$
4. Simplify: $3^{3\pi-1} \cdot 3^{\pi+4}$
5. Solve: $x^{\frac{2}{5}} + 5 = 14$
6. Solve: $36^x = \frac{1}{\sqrt{6}}$
7. A mouse population is 10,000. It is decreasing at a rate of 20% per year. How many will be left in 2 years?
8. In problem #7, when will the population be half the original size?
9. Graph this function using two majors points: $f(x) = 5^x$ Identify the domain, range, y-intercept and asymptote.
10. Graph this function using two majors points: $f(x) = \left(\frac{1}{3}\right)^x$ Identify the domain, range, y-intercept and asymptote.
11. Given the function: $f(x) = \left(\frac{1}{3}\right)^x$, find $f(x) = -\left(\frac{1}{3}\right)^{x-4} + 7$.
12. Explain how making b in $f(x) = b^x$ larger or smaller changes the shape of the graph. What values cannot be b ?
13. a) Convert to a logarithm: $5^{\frac{1}{2}} = \sqrt{50}$, b) Convert to an exponent: $\log_{11} 1 = 0$
14. Simplify $\text{Log}_9 27$
15. Solve: $5^{x-1} = 100$
16. Solve: $\log_x 20 = 3$
17. Graph this function using two majors points: $f(x) = \log_7 x$ Identify the domain, range, y-intercept and asymptote.
18. I invest \$7500 into an account that gets 5% interest compounded monthly. When will I double my money?
19. An adult takes 400 mg of ibuprofen. Each hour, the amount of ibuprofen in the person's system decreases by about 29%. How much ibuprofen is left after 6 hours?