

ALGEBRA II
Chapter 7 Practice Test

Note: Please show all work to support your answers.

1. Consider the functions $f(x) = -2(3)^{x+1} - 1$.

a. Does the equation represent exponential *growth* or *decay*?

1a. _____

b. State the asymptote.

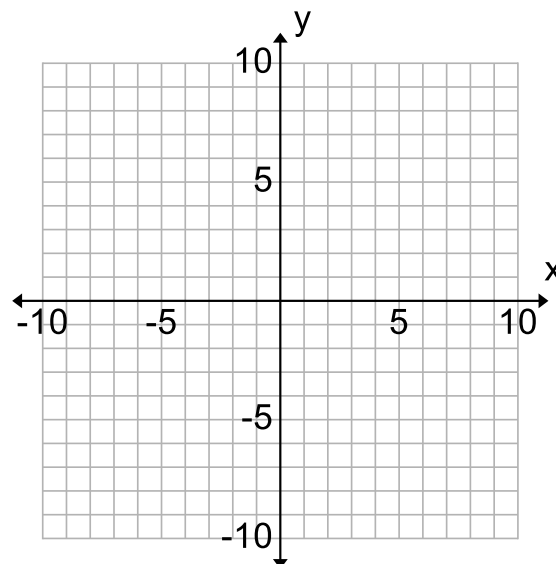
1b. _____

c. State the domain and range.

1c. D: _____

R: _____

d. Please graph the function.



2. What is the exponential equation that passes the points (0, 2) and (2, 4)?

2. _____

Please solve the following equations or inequalities.

3. $25^{3x+4} = 125^{x+2}$

3. _____

4. $\left(\frac{1}{4}\right)^{m-7} = 16$

4. _____

5. $10^{x+3} < 100^{x-1}$

5. _____

6. $\log_{64} n = \frac{2}{3}$

6. _____

7. $\log_4(2x+5) \leq \log_4(3x-2)$

7. _____

8. $\log_5 n = \frac{1}{3} \log_5 64 + \frac{1}{2} \log_5 49$

8. _____

9. $\log_6(5-2a) - \log_6 3a = 1$

9. _____

10. $\log_3(x-3) + \log_3(x+2) = \log_3 6$

10. _____

11. $7^{n+3} = 80$ (Please round to the nearest ten-thousandth.)

11. _____

12. $3^n = 6^{n-2}$ (Please round to the nearest ten-thousandth.)

12. _____

13. $5^{4x-1} < 30$ (Please round to the nearest ten-thousandth.)

13. _____

14. $\ln(x + 4) = 4$ (Please round to the nearest ten-thousandth.)

14. _____

15. $e^{-3x} \leq 18$ (Please round to the nearest ten-thousandth.)

15. _____

Use $\log_5 2 \approx 0.4307$ and $\log_5 3 \approx 0.6826$ to approximate the value of each expression.

16. $\log_5 18$

16. _____

17. $\log_5 \frac{5}{2}$

17. _____

18. Suppose you deposit \$1000 in an account that pays 7.2% annual interest, compounded *continuously*. Find the balance after 5 years. Round to the proper number of digits.
(Hint: it's money.)

18. _____

19. In 5 months, half of a 22-gram sample of a radioactive element remains.

a. Find the constant k for this element for t hours.

(Please round to the nearest ten-thousandth.)

19a. _____

b. Write the equation modeling its exponential decay.

19b. _____

20. A savings account deposit of \$300 is to earn 5.8% interest. After how many years will the investment be worth \$900? Use $y = a(1+r)^t$ and round to the nearest tenth.

20. _____