

Chapter 8 Practice Test

Adv. Algebra

Name _____

For each of the following problems, ***show work or receive no credit.***

1. A new truck that sells for \$34,000 depreciates 12% each year. Write a function that models the value y of the truck after t years. Then find the value of the truck after 6 years.

Function: _____ Amount after 6 years: _____

2. The dolphin population increases at a rate of 3.5% per year. There are 1954 dolphins this year. Write a function that models the population of dolphins, y , after t years. How many dolphins will there be in 8 years?

Function: _____ Dolphins in 8 years: _____

3. An investment of \$75,000 increases at a rate of 4.25% compounded continuously. Find the value of the investment after 30 years.

Value of investment after 30 years: _____

4. Kevin has \$800 to invest in an account that compounds interest continuously at an annual rate of 4%. How long will it take him account to grow to \$1500? (Round to the nearest tenth of a year.)

Time to grow account to \$1500: _____

Graph each exponential function. State the domain, range, asymptote, and transformations from the parent graph. Show at least three points and the asymptote in the graph.

5. $y = -(2)^{x-1} - 2$

Domain: _____

Range: _____

Asymptote: _____

Transformations: _____

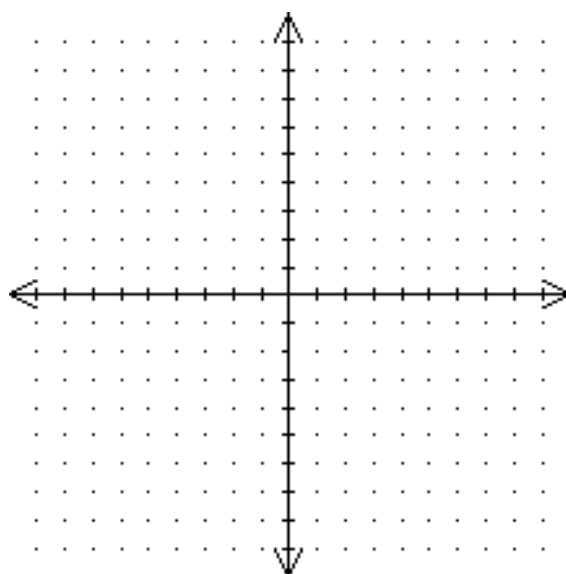
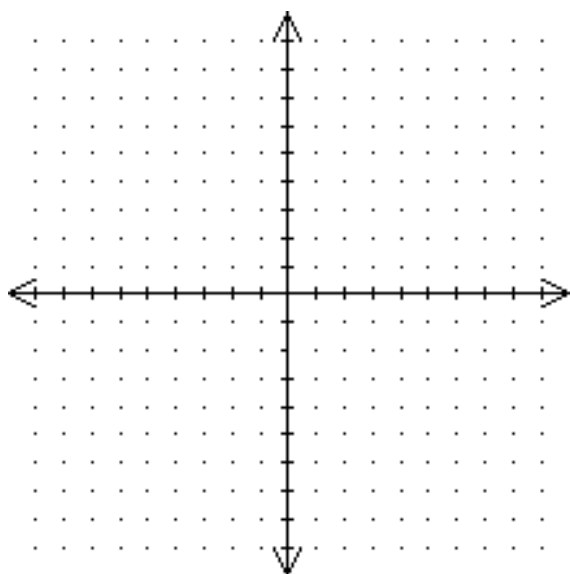
6. $y = \log_5(x - 3)$

Domain: _____

Range: _____

Asymptote: _____

Transformations: _____



7. The parent function for a graph is $y = 3(2)^x$. In writing, explain the transformations you do to the parent graph to graph $y = -3(2)^{x-3} + 2$.

Write an exponential function $y = ab^x$ for a graph that includes the given points. **Show work or receive no credit.**

8. (1, 24) , (4, 1536)

9. (2, 48), (-1, 6)

Function: _____

Function: _____

Write each equation in exponential form.

10. $\log_{12} \frac{1}{144} = -2$

Exponential form: _____

Evaluate each logarithm. (Do not use change of base or a calculator.)

11. $\log_4 16$

13. $\ln e^2$

Evaluation: _____

Evaluation: _____

12. $\log_9 \frac{1}{3}$

Evaluation: _____

Expand the following logarithms.

14. $\log_5 \frac{2x^6}{3}$

15. $\log \frac{5\sqrt{x}}{y^3}$

Expansion: _____

Expansion: _____

Condense the following logarithmic expressions.

16. $\frac{1}{3} \log 5 - 2 \log y + 3 \log z$

17. $2 \log_3 a - (\log_3 b + 4 \log_3 c)$

Condensing: _____

Condensing: _____

Solve the equation. Round to two decimal places. **Show work or receive no credit.**

18. $\log x + \log 4 = 2$

20. $4^{3x-1} - 2 = 10$

Solution(s): _____

Solution(s): _____

19. $3 \log 2x = 4$

21. $4 \ln (8x + 1) = 12$

Solution(s): _____

Solution(s): _____