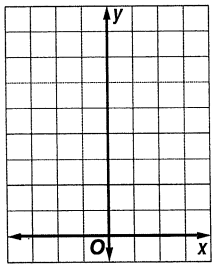
NAME _____ DATE _____ PERIOD ____

9-1 Practice

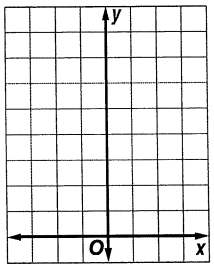
Exponential Functions

Sketch the graph of each function. Then state the function's domain and range.

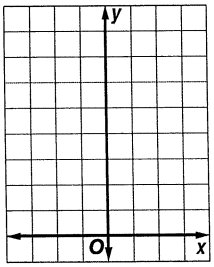
1. $y = 1.5(2)^x$



2. $y = 4(3)^x$



3. $y = 3(0.5)^x$



Determine whether each function represents exponential *growth* or *decay*.

4. $y = 5(0.6)^x$

5. $y = 0.1(2)^x$

6. $y = 5 \cdot 4^{-x}$

Write an exponential function whose graph passes through the given points.

7. (0, 1) and (−1, 4)

8. (0, 2) and (1, 10)

9. (0, −3) and (1, −1.5)

10. (0, 0.8) and (1, 1.6)

11. (0, −0.4) and (2, −10)

12. (0, π) and (3, 8π)

Simplify each expression.

13. $(2^{\sqrt{2}})^{\sqrt{8}}$

14. $(n^{\sqrt{3}})^{\sqrt{75}}$

15. $y^{\sqrt{6}} \cdot y^{5\sqrt{6}}$

16. $13^{\sqrt{6}} \cdot 13^{\sqrt{24}}$

17. $n^3 \div n^{\pi}$

18. $125^{\sqrt{11}} \div 5^{\sqrt{11}}$

Solve each equation or inequality. Check your solution.

19. $3^{3x-5} > 81$

20. $7^{6x} = 7^{2x-20}$

21. $3^{6n-5} < 9^{4n-3}$

22. $9^{2x-1} = 27^{x+4}$

23. $2^{3n-1} \geq \left(\frac{1}{8}\right)^n$

24. $16^{4n-1} = 128^{2n+1}$

BIOLOGY For Exercises 25 and 26, use the following information.

The initial number of bacteria in a culture is 12,000. The number after 3 days is 96,000.

25. Write an exponential function to model the population y of bacteria after x days.

26. How many bacteria are there after 6 days?

27. EDUCATION A college with a graduating class of 4000 students in the year 2005 predicts that it will have a graduating class of 4862 in 4 years. Write an exponential function to model the number of students y in the graduating class t years after 2005.

Lesson 9-1