Name _____ Class _____ Date _____

Practice

Form G

Solving Exponential Equations

Solve each exponential equation.

1. $5^x = 125$

2. $7^{x+1} = 2401$

3. $\frac{1}{512} = 8^x$

4. $6^{x+2} = \frac{1}{36}$

5. $\frac{1}{27} = \frac{1}{3^{2x-1}}$

6. $3^x = 243$

7. $5^{x+2} = 625$

8. $\frac{1}{81} = 3^{x-1}$

9. $2^{2x+1} = \frac{1}{32}$

10. $\frac{1}{343} = 7^x$

11. $4^x = 1024$

12. $2^{x+2} = 256$

13. $3^{3x} = \frac{1}{729}$

14. $6^x = 216$

15. $\frac{1}{5} = 5^{x-1}$

16. $8^{x+2} = \frac{1}{512}$

17. $6^{2x+1} = \frac{1}{1296}$

18. $3^{x-1} = 729$

19. $4^x = \frac{1}{256}$

20. $\frac{1}{8^{3x}} = \frac{1}{64}$

Name _____ Class _____ Date _____

Practice (continued) *Form G*

Solving Exponential Equations

Find the solution of each equation by graphing.

21. $3^{2x+1} = 27$

22. $\frac{1}{4} = 2^{2x-1}$

23. Biodiversity The function $P(n) = 10 \cdot 2^{\frac{n}{4}}$ models the population of tree frogs living in a park after n months. How many months will it take for the tree frog population to reach 5120?

24. Error Analysis A student solved the exponential equation as follows:

$$2^{2x+1} = \frac{1}{128}$$
$$2^{2x+1} = \frac{1}{2^7}$$
$$2x + 1 = 7$$
$$2x = 6$$
$$x = 3$$

What mistake did the student make? What is the correct solution?