

In Exercises 3–12, solve the equation. Check your solution. (See Examples 1 and 2.)

3. $4^{5x} = 4^{10}$

4. $7^{x-4} = 7^8$

5. $3^{9x} = 3^{7x+8}$

6. $2^{4x} = 2^{x+9}$

7. $2^x = 64$

8. $3^x = 243$

9. $7^{x-5} = 49^x$

10. $216^x = 6^{x+10}$

11. $64^{2x+4} = 16^{5x}$

12. $27^x = 9^{x-2}$

In Exercises 13–18, solve the equation. Check your solution. (See Example 3.)

13. $\left(\frac{1}{5}\right)^x = 125$

14. $\left(\frac{1}{4}\right)^x = 256$

15. $\frac{1}{128} = 2^{5x+3}$

16. $3^{4x-9} = \frac{1}{243}$

17. $36^{-3x+3} = \left(\frac{1}{216}\right)^{x+1}$

18. $\left(\frac{1}{27}\right)^{4-x} = 9^{2x-1}$