




8.3 EXERCISES

HOMEWORK KEY

-  = **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 11 and 53
-  = **TAKS PRACTICE AND REASONING**
Exs. 44, 45, 54, 57, 59, and 60
-  = **MULTIPLE REPRESENTATIONS**
Ex. 55

SKILL PRACTICE

1. **VOCABULARY** Which definitions or properties would you use to simplify the expression $3^5 \cdot 3^{-5}$? *Explain.*

2. **WRITING** *Explain* why the expression 0^{-4} is undefined.

EXAMPLE 1

on p. 503
for Exs. 3–14

EVALUATING EXPRESSIONS Evaluate the expression.

3. 4^{-3}

4. 7^{-3}

5. $(-3)^{-1}$

6. $(-2)^{-6}$

7. 2^0

8. $(-4)^0$

9. $\left(\frac{3}{4}\right)^0$

10. $\left(\frac{-9}{16}\right)^0$

11. $\left(\frac{2}{7}\right)^{-2}$

12. $\left(\frac{4}{3}\right)^{-3}$

13. 0^{-3}

14. 0^{-2}

15. $2^{-2} \cdot 2^{-3}$

16. $7^{-6} \cdot 7^4$

17. $(2^{-1})^5$

18. $(3^{-2})^2$

19. $\frac{1}{3^{-3}}$

20. $\frac{1}{6^{-2}}$

21. $\frac{3^{-3}}{3^2}$

22. $\frac{6^{-3}}{6^{-5}}$


23. $4\left(\frac{3}{2}\right)^{-1}$

24. $16\left(\frac{2^{-3}}{2^2}\right)$

25. $6^0 \cdot \left(\frac{1}{4^{-2}}\right)$

26. $3^{-2} \cdot \left(\frac{5}{7^0}\right)$

27. **ERROR ANALYSIS** *Describe* and correct the error in evaluating the expression $-6 \cdot 3^0$.

$$\begin{aligned} -6 \cdot 3^0 &= -6 \cdot 0 \\ &= 0 \end{aligned}$$


EXAMPLE 2

on p. 504
for Exs. 15–27

SIMPLIFYING EXPRESSIONS Simplify the expression. Write your answer using only positive exponents.

28. x^{-4}

29. $2y^{-3}$

30. $(4g)^{-3}$

31. $(-11h)^{-2}$

32. x^2y^{-3}

33. $5m^{-3}n^{-4}$

34. $(6x^{-2}y^3)^{-3}$

35. $(-15fg^2)^0$

36. $\frac{r^{-2}}{s^{-4}}$

37. $\frac{x^{-5}}{y^2}$

38. $\frac{1}{8x^{-2}y^{-6}}$

39. $\frac{1}{15x^{10}y^{-8}}$

40. $\frac{1}{(-2z)^{-2}}$

41. $\frac{9}{(3d)^{-3}}$

42. $\frac{(3x)^{-3}y^4}{-x^2y^{-6}}$

43. $\frac{12x^8y^{-7}}{(4x^{-2}y^{-6})^2}$

44.  **TAKS REASONING** Which expression simplifies to $2x^4$?

(A) $2x^{-4}$

(B) $\frac{32}{(2x)^{-4}}$

(C) $\frac{1}{2x^{-4}}$

(D) $\frac{8}{4x^{-4}}$

45.  **TAKS REASONING** Which expression is equivalent to $(-4 \cdot 2^0 \cdot 3)^{-2}$?

(A) -12

(B) $-\frac{1}{144}$

(C) 0

(D) $\frac{1}{144}$