8.4-8.6 Study Guide

In 1 and 2, rewrite without negative exponents.

1. $x^{-3} \cdot y^{-4}$ $\frac{1}{x^3 \cdot y^4}$

2. $3a^2b^{-5}$ $\frac{3a^2}{b^5}$

In 3–8, rewrite: a. without fractions; b. without negative exponents.

3. $\frac{32c^{-4}}{16c^2}$

a. $2c^{-6}$

b. $\frac{2}{c^6}$

4. $\frac{-d^{-2}e^2}{de}$

a. $-d^{-3}e$

b. $-\frac{e}{d^3}$

In 16–24, use the properties of negative exponents to find the value of x.

16. $\frac{p^{-3}}{p^x} = \frac{1}{p^7}$ $x = 4$

$\frac{1}{p^3 \cdot p^x}$ so $x = 4$

17. $\left(\frac{3}{4}\right)^x = \frac{16}{9}$ $x = -2$

flips! So negative!

$\left(\frac{4}{3}\right)^x$

18. $\frac{r^{-2}s^x}{s^3} = \frac{1}{r^2s^6}$ $x = -3$

19. $\frac{t^5}{t^x} = t^{11}$ $t = -6$

In 12–16, rewrite without parentheses and simplify.

12. $(2a^2b)^5$ $2^5a^{10}b^5 \Rightarrow 32a^{10}b^5$

13. $4(-3c^3d^4)^2$ $4(9c^6d^8) = 36c^6d^8$

14. $\left(\frac{-3e^5f^7}{5e^3f^9}\right)^3$ $\left(\frac{-27e^{15}f^{21}}{125e^9f^{27}}\right) = \frac{-27e^6}{125f^6}$

15. $\frac{-4}{7} \cdot \left(\frac{h^5}{2h^2}\right)^4$ $\frac{-4}{7}\left(\frac{h^{20}}{16h^8}\right) = \frac{-1h^{12}}{28}$

1. The area of a square is 64 square units. What is the length of a side? $\sqrt{64} = 8$

In 2–10, write the exact value or approximate the number to the nearest hundredth.

2. $\sqrt{169}$ 13

3. $-\sqrt{441}$ 21

4. $\sqrt{225}$ 15

5. $\sqrt{85}$ 9.22

15. Order the following numbers from least to greatest.

$\left(\frac{3}{4}\right)^{-2}, \frac{3}{16}, (-3)(-4), \left(\frac{2}{3}\right)^{-4}$

1.78 (4) $\quad .1875$ (3) $\quad -3$ (2) $\quad -4$ (1) $\quad 5.06$ (5)

$(-4), (-3), \frac{3}{16}, \left(\frac{3}{4}\right)^{-2}, \left(\frac{2}{3}\right)^{-4}$

In 3 and 4, an expression is given.

a. Write the expression in expanded form.

b. Simplify the expression.

3. $(-7x)^2$

a. $(-7x)(-7x)$

b. $49x^2$

4. $\left(\frac{2a}{5b}\right)^3$

a. $\left(\frac{2a}{5b}\right)\left(\frac{2a}{5b}\right)\left(\frac{2a}{5b}\right)$

b. $\frac{8a^3}{125b^3}$

In 5–11, simplify and give the answer as a simple fraction.

5. $(3y^2)^3$ $27y^6$

6. $-(2m^2)^4$ $-16m^8$

In 11–18, evaluate the expression. Write the exact value or approximate to the nearest hundredth.

11. $\sqrt{1{,}048 - 24}$ $\sqrt{1024}$ 32

12. $\sqrt{9 + 64}$ $\sqrt{73}$ 8.54

13. $(16 + 81)^{\frac{1}{2}}$ $(97)^{1/2}$ 9.85

14. $(25 + 144)^{\frac{1}{2}}$ $(169)^{1/2}$ 13

22. Which of the expressions below are equal to $(48)^{1/2}$? 6.93 A, C, D

A $4\sqrt{3}$ 6.93 B $2\sqrt{24}$ 9.8 C $2\sqrt{12}$ 6.93 D $\sqrt{6}\cdot\sqrt{8}$ 6.93

In 23–32, write the exact value or approximate the number to the nearest hundredth.

23. $\sqrt[3]{9.261}$ 2.1

24. $\sqrt[3]{125}$ 5

25. $\sqrt{14a^4 + 11a^4}$ $\sqrt{25a^4}$ $5a^2$

26. $\sqrt{36x^4y^8}$ $6x^2y^4$