LESSON 6-2 Practice A

Rational Exponents

Match each expression with a fractional exponent to an equivalent radical expression. Write the correct letter on the answer blank.

1. $x^{\frac{1}{2}}$ _____   A. $\left(\sqrt{x}\right)^3$

2. $x^{\frac{1}{3}}$ _____   B. $\sqrt{x}$

3. $x^{\frac{2}{3}}$ _____   C. $\left(\sqrt[3]{x}\right)^2$

4. $x^{\frac{3}{2}}$ _____   D. $\sqrt[3]{x}$

Simplify each expression. All variables represent nonnegative numbers.

5. $49^{\frac{1}{2}}$ 6. $81^{\frac{1}{4}}$ 7. $1^{\frac{1}{3}}$

_____   _____   _____

8. $8^{\frac{1}{3}} + 100^{\frac{1}{2}}$ 9. $16^{\frac{3}{4}}$ 10. $27^{\frac{2}{3}}$

_____   _____   _____

11. $1^{\frac{2}{5}}$ 12. $8^{\frac{5}{3}}$ 13. $\sqrt{x^{16}}$

_____   _____   _____

14. $\sqrt{x^6 y^8}$ 15. $\sqrt[4]{m^{16} n^4}$ 16. $\left(x^2\right)^{\frac{1}{2}} \sqrt[3]{x^3}$

_____   _____   _____

17. Given a square with area x, you can use the formula $d = 1.4x^{\frac{1}{2}}$ to estimate the length of the diagonal of the square. Use the formula to estimate the length of the diagonal of a square with area 100 cm².

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LESSON 6-2 Practice B

Rational Exponents

Simplify each expression. All variables represent nonnegative numbers.

1. $27^{\frac{1}{3}}$

2. $121^{\frac{1}{2}}$

3. $0^{\frac{1}{3}}$

_____   _____   _____

4. $64^{\frac{1}{2}} + 27^{\frac{1}{3}}$

5. $16^{\frac{1}{4}} + 8^{\frac{1}{3}}$

6. $100^{\frac{1}{2}} - 64^{\frac{1}{6}}$

_____   _____   _____

7. $1^{\frac{1}{5}} + 49^{\frac{1}{2}}$

8. $25^{\frac{3}{2}}$

9. $32^{\frac{3}{5}}$

_____   _____   _____

10. $16^{\frac{3}{4}}$

11. $16^{\frac{5}{6}}$

12. $121^{\frac{3}{2}}$

_____   _____   _____

13. $\sqrt[5]{y^5}$

14. $\sqrt{x^4 y^{12}}$

15. $\sqrt[3]{a^6 b^3}$

_____   _____   _____

16. $(x^{\frac{1}{2}})^4 \sqrt{x^6}$

17. $(x^{\frac{1}{3}} y)^3 \sqrt{x^2 y^2}$

18. $\dfrac{(x^{\frac{1}{4}})^8}{\sqrt[3]{x^3}}$

_____   _____   _____

19. Given a cube with volume V, you can use the formula $P = 4V^{\frac{1}{3}}$ to find the perimeter of one of the cube's square faces. Find the perimeter of a face of a cube that has volume 125 m³.

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