

Additional Exercises 7.2
Form I
Rational Exponents

Use radical notation to rewrite each expression. Simplify if possible.

1. $64^{\frac{1}{2}}$ 1. _____

2. $27^{\frac{1}{3}}$ 2. _____

3. $(5xy)^{\frac{1}{2}}$ 3. _____

4. $32^{\frac{2}{5}}$ 4. _____

Rewrite each expression with a rational exponent.

5. $\sqrt{10}$ 5. _____

6. $\sqrt[5]{4x}$ 6. _____

7. $\sqrt[3]{8^2}$ 7. _____

8. $(\sqrt[4]{16})^5$ 8. _____

Rewrite the expression with a positive rational exponent. Simplify, if possible.

9. $49^{-\frac{1}{2}}$ 9. _____

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

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11. $(-27)^{-\frac{2}{3}}$ 11. _____

12. $100^{-\frac{3}{2}}$ 12. _____

Use the properties of rational exponents to simplify each expression. Assume that all variables represent positive numbers.

13. $x^{\frac{1}{8}}x^{\frac{7}{8}}$ 13. _____

14. $\frac{a^{\frac{4}{5}}}{a^{\frac{1}{5}}}$ 14. _____

15. $(100x^8y^4)^{\frac{1}{2}}$ 15. _____

16. $\left(x^{-\frac{3}{4}}y^{\frac{-2}{3}}\right)^{-12}$ 16. _____

Use rational exponents to simplify each expression. If rational exponents appear after simplifying, write the answer in radical notation. Assume that all variables represent positive numbers.

17. $\sqrt[10]{x^5}$ 17. _____

18. $\sqrt[20]{(3y)^4}$ 18. _____

19. $\sqrt[3]{x} \cdot \sqrt[2]{x}$ 19. _____

20. $\frac{\sqrt{10}}{\sqrt[3]{10}}$ 20. _____

Additional Exercises 7.2
Form II
Rational Exponents

Use radical notation to rewrite each expression. Simplify if possible.

1. $196^{\frac{1}{2}}$ 1. _____

2. $(-125)^{\frac{1}{3}}$ 2. _____

3. $(4xy^4)^{\frac{1}{5}}$ 3. _____

4. $(81)^{\frac{3}{4}}$ 4. _____

Rewrite each expression with a rational exponent.

5. $\sqrt{21}$ 5. _____

6. $\sqrt[3]{9x}$ 6. _____

7. $\sqrt[3]{x^6y}$ 7. _____

8. $(\sqrt[3]{-27y})^4$ 8. _____

Rewrite the expression with a positive rational exponent. Simplify, if possible.

9. $81^{-\frac{3}{2}}$ 9. _____

10. $(-27)^{-\frac{1}{3}}$ 10. _____

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11. $(4xy^2)^{-\frac{3}{4}}$ 11. _____

12. $4x^{-\frac{1}{3}}$ 12. _____

Use the properties of rational exponents to simplify each expression. Assume that all variables represent positive numbers.

13. $a^{\frac{2}{3}}a^{\frac{4}{3}}$ 13. _____

14. $\frac{y^{\frac{5}{6}}}{y^{\frac{2}{6}}}$ 14. _____

15. $(-27x^9y^{12})^{\frac{1}{3}}$ 15. _____

16. $\left(x^{-\frac{9}{8}}y^{\frac{6}{5}}\right)^{\frac{1}{3}}$ 16. _____

Use rational exponents to simplify each expression. If rational exponents appear after simplifying, write the answer in radical notation.

17. $\sqrt[12]{(4x)^3}$ 17. _____

18. $\sqrt[4]{y} \cdot \sqrt[5]{y^2}$ 18. _____

19. $\frac{\sqrt[3]{12}}{\sqrt[6]{12}}$ 19. _____

20. $\left(\sqrt[3]{xy^2}\right)^4$ 20. _____

Additional Exercises 7.2
Form III
Rational Exponents

Use radical notation to rewrite each expression. Simplify if possible.

1. $1000^{\frac{1}{3}}$ 1. _____

2. $(-216)^{\frac{2}{3}}$ 2. _____

3. $(9x^2y^3)^{\frac{3}{5}}$ 3. _____

4. $16^{\frac{3}{2}} + 4^{\frac{1}{2}}$ 4. _____

Rewrite each expression with a rational exponent.

5. $\sqrt[3]{30}$ 5. _____

6. $\sqrt[8]{10x^5}$ 6. _____

7. $(\sqrt{14xy})^5$ 7. _____

8. $(\sqrt[4]{16y^2})^3$ 8. _____

Rewrite the expression with a positive rational exponent. Simplify, if possible.

9. $8x^{-\frac{1}{2}}$ 9. _____

10. $(-125)^{-\frac{2}{3}}$ 10. _____

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11. $(3xy^2)^{\frac{-1}{2}}$ 11. _____

12. $25^{\frac{-1}{2}} + 125^{\frac{1}{3}}$ 12. _____

Use the properties of rational exponents to simplify each expression. Assume that all variables represent positive numbers.

13. $y^{\frac{3}{4}}y^{\frac{1}{8}}$ 13. _____

14. $\frac{a^{\frac{3}{4}}}{a^{\frac{1}{3}}}$ 14. _____

15. $(-125x^6y^{12})^{\frac{2}{3}}$ 15. _____

16. $(16x^{-4}y^8z^4)^{\frac{-1}{4}}$ 16. _____

Use rational exponents to simplify each expression. If rational exponents appear after simplifying, write the answer in radical notation.

17. $\sqrt[5]{x^3} \cdot \sqrt[3]{x^2}$ 17. _____

18. $\sqrt[18]{(6x)^6}$ 18. _____

19. $\sqrt[8]{\sqrt[5]{xy}}$ 19. _____

20. $\frac{\sqrt[6]{20}}{\sqrt[10]{20}}$ 20. _____