

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. $15^{\frac{1}{5}} + 49^{\frac{1}{2}}$

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

Explain the Error Yuan is asked to evaluate the expression $(-8)^{\frac{2}{3}}$ on his exam, and writes that it is unsolvable because you cannot evaluate a negative number to an even fractional power. Is he correct, and if so, why? If he is not correct, what is the correct answer?

Name _____ Date _____ Class _____