

Math 3
Rational Exponents 1

Name _____

Express using rational exponents.

$$1. \sqrt{14} = 14^{\frac{1}{2}}$$

$$2. \sqrt[3]{8x^3y^6} = 2xy^2$$

$$3. \sqrt{25a^3b^4} = 5a^{\frac{3}{2}}b^2$$

$$4. \sqrt[4]{8x^3y^5} = 8^{\frac{1}{4}}x^{\frac{3}{4}}y^{\frac{5}{4}}$$

$$5. \sqrt[3]{16a^5b^7} = 16^{\frac{1}{3}}a^{\frac{5}{3}}b^{\frac{7}{3}}$$

$$6. \sqrt[6]{b^3} = b^{\frac{1}{2}}$$

Express in simplest radical form.

$$7. 7^{\frac{1}{2}} = \sqrt{7}$$

$$8. 36^{\frac{1}{4}} = \sqrt{6}$$

$$9. x^{\frac{3}{2}}y^{\frac{5}{2}} = xy^2\sqrt{xy}$$

$$10. 4^{\frac{1}{3}}x^{\frac{2}{3}}y^{\frac{1}{3}} = \sqrt[3]{4x^2y}$$

$$11. x^{\frac{3}{4}}y^{\frac{1}{2}} = \sqrt[4]{x^3y^2}$$

$$12. 5^{\frac{1}{6}}x^{\frac{1}{2}}y^{\frac{1}{3}} = \sqrt[6]{5x^3y^2}$$

Evaluate without using a calculator.

$$13. 9^{\frac{3}{2}} = 27$$

$$14. 16^{\frac{3}{4}} = 8$$

$$15. 9^{\frac{1}{3}} \cdot 9^{\frac{5}{3}} = 81$$

$$16. 343^{\frac{2}{3}} = 49$$

$$17. 16^{-\frac{3}{2}} = \frac{1}{64}$$

$$18. 4^{\frac{3}{2}} = 8$$

$$19. \sqrt[4]{81} = 3$$

$$20. 36^{\frac{3}{4}} \div 36^{\frac{1}{4}} = 6$$