

Name _____
Mr. Schlansky

Date _____
Algebra II

Fractional Exponents Regents Practice

1. When $b > 0$ and d is a positive integer, the expression $(3b)^{\frac{2}{d}}$ is equivalent to

- 1) $\frac{1}{\left(\sqrt[d]{3b}\right)^2}$ 2) $\left(\sqrt{3b}\right)^d$ 3) $\frac{1}{\sqrt{3b^d}}$ 4) $\left(\sqrt[d]{3b}\right)^2$

2. The expression $\left(\frac{m^2}{\frac{1}{\frac{1}{3}}}{m}\right)^{-\frac{1}{2}}$ is equivalent to

- 1) $-\sqrt[6]{m^5}$ 3) $-m^5\sqrt{m}$
2) $\frac{1}{\sqrt[6]{m^5}}$ 4) $\frac{1}{m^5\sqrt{m}}$

3. For $x \neq 0$, which expressions are equivalent to one divided by the sixth root of x ?

I. $\frac{\sqrt[6]{x}}{\sqrt[3]{x}}$ II. $\frac{x^{\frac{1}{6}}}{x^{\frac{1}{3}}}$ III. $x^{-\frac{1}{6}}$

- 1) I and II, only 3) II and III, only
2) I and III, only 4) I, II, and III

4. What does $\left(\frac{-54x^9}{y^4}\right)^{\frac{2}{3}}$ equal?

- 1) $\frac{9ix^6\sqrt[3]{4}}{y^3\sqrt[3]{y^2}}$ 2) $\frac{9ix^6\sqrt[3]{4}}{y^2\sqrt[3]{y^2}}$ 3) $\frac{9x^6\sqrt[3]{4}}{y^3\sqrt[3]{y}}$ 4) $\frac{9x^6\sqrt[3]{4}}{y^2\sqrt[3]{y^2}}$

5. Use the properties of rational exponents to determine the value of y for the equation:

$$\frac{\sqrt[3]{x^8}}{(x^4)^{\frac{1}{3}}} = x^y, \quad x > 1$$

6. Explain how $\left(3^{\frac{1}{5}}\right)^2$ can be written as the equivalent radical expression $\sqrt[5]{9}$.

7. Given the equal terms $\sqrt[3]{x^5}$ and y^7 , determine and state y , in terms of x .

8. Write $\sqrt[3]{x} \cdot \sqrt{x}$ as a single term with a rational exponent.

9. Explain how $(-8)^{\frac{4}{3}}$ can be evaluated using properties of rational exponents to result in an integer answer.