6.6 Rational Exponents – Day 2 Notes

Objective: Simplifying different nth root radical and rational expressions.

Recall that when in radical form, we were only able to add, subtract, multiply & divide radical expressions with matching indexed roots.

Ex. $\frac{\sqrt[3]{16}}{\sqrt[3]{2}} =$

ex. $\sqrt{2} + \sqrt{32} - \sqrt{8}$

Translating radical expressions into _____allows us to perform

operations with radicals _____.

General Rule for simplifying radicals: final answer should be in same form as the original problem.

Write as one term. Simplify if possible.

Ex. $\sqrt[5]{\boldsymbol{p}} * \sqrt{\boldsymbol{p}} =$

1. $\sqrt[6]{\mathbf{16}} * \sqrt[3]{\mathbf{16}} =$

Ex. $\frac{x^{\frac{2}{3}}}{x^{\frac{1}{4}}}$

2. $\frac{64^{\frac{3}{2}}}{64^{\frac{4}{3}}}$

3. $\left(\sqrt[5]{\boldsymbol{x}}\right)^{\mathbf{2}} * \left(\sqrt[10]{\boldsymbol{x}}\right)^{\mathbf{3}}$

4. $\frac{p}{p^{\frac{1}{3}}}$

Bases must match when translating to rational exponents to multiply or divide different indexed root radicals.

Ex. $\sqrt[3]{9} * \sqrt{27}$

5. $\sqrt[4]{8} * \sqrt{2}$

Ex. $\frac{\sqrt[4]{27}}{\sqrt{3}}$

6. $\frac{\sqrt[4]{32}}{\sqrt[3]{2}}$

7. $\frac{\sqrt[6]{16}}{\sqrt[3]{2}}$

Special cases with negative exponents and rationalizing denominators.

Ex. $b^{-\frac{5}{6}}$

9. $r^{-\frac{4}{5}}$

10. $b^{-\frac{1}{4}}$

11. $x^{-\frac{2}{5}}$