

## Algebra 2

## Homework – Rational Exponents

Name \_\_\_\_\_

Simplify each expression.

1.  $\sqrt[3]{64x^{12}y^6}$

1. \_\_\_\_\_

2.  $\sqrt[3]{x^8y^{16}}$

2. \_\_\_\_\_

3.  $\sqrt[3]{5x^6} \cdot \sqrt[3]{25x^{11}}$

3. \_\_\_\_\_

4.  $\sqrt[5]{x^4} \cdot \sqrt[3]{x}$

4. \_\_\_\_\_

5.  $\frac{\sqrt[3]{81m^{11}}}{\sqrt[3]{3m^2}}$

5. \_\_\_\_\_

6.  $\frac{5^{-7} \cdot \sqrt[4]{64n^{17}}}{5^{-8} \cdot \sqrt[4]{4n}}$

6. \_\_\_\_\_

7. 
$$\frac{\left(6m^{\frac{1}{4}}\right)^2}{4m^{\frac{3}{8}}}$$

7. \_\_\_\_\_

8. 
$$\frac{1}{\left(32^{\frac{1}{4}}m^{\frac{3}{4}}\right)^{-4}}$$

8. \_\_\_\_\_

9. Explain if the following expression was simplified correctly:

Claim :  $y^{\frac{5}{2}} = \left(\sqrt[5]{y}\right)^2$

Work : 
$$\begin{aligned} &\left(y^{\frac{1}{5}} \cdot y^{\frac{1}{5}}\right) \\ &\left(\sqrt[5]{y} \cdot \sqrt[5]{y}\right) \\ &\left(\sqrt[5]{y}\right)^2 \end{aligned}$$

10. Which of the following expressions is equivalent to  $3m^4$

10. \_\_\_\_\_

a. 
$$\frac{3^{-4} \cdot \sqrt[4]{m^{11}}}{3^{-3} \cdot \sqrt[4]{m^3}}$$

b. 
$$\frac{\left(3m^{\frac{1}{4}}\right)^3}{27m^{\frac{5}{12}}}$$

c. 
$$\frac{9 \cdot \sqrt[4]{2m^{17}}}{\sqrt[4]{162m}}$$