Name _____ key _____ Class _____ Date _____

Rational Exponents: HW: Lesson 5

Simplify each expression. Assume that all variables are positive.

1. $27^{\frac{1}{3}}$

3

2. $\left(81^{\frac{1}{4}}\right)^4$

81

3. $\left(256^4\right)^{\frac{1}{4}}$

256

4. 7^0

1

5. $(-27)^{\frac{2}{3}}$

9

6. $8^{\frac{2}{3}}$

4

7. $(-1)^{\frac{1}{5}}$

-1

8. $16^{\frac{1}{4}}$

2

9. 3.6^0

1

10. $\left(3a^{\frac{1}{2}}b^{\frac{1}{3}}\right)^2$

$9a\sqrt[3]{b^2}$

11. $\left(a^{\frac{2}{3}}b^{-\frac{1}{2}}\right)^{-6}$

$\dfrac{b^3}{a^4}$

12. $\left(2a^{\frac{1}{4}}\right)^3$

$8\sqrt[4]{a^3}$

13. $81^{-\frac{1}{2}}$

$\dfrac{1}{9}$

14. $\left(9x^4y^{-2}\right)^{\frac{1}{2}}$

$\dfrac{3x^2}{y}$

Write each expression in radical form.

15. $x^{\frac{4}{3}}$

$\sqrt[3]{x^4}$

16. $(2y)^{\frac{1}{3}}$

$\sqrt[3]{2y}$

17. $a^{1.5}$

$a\sqrt{a}$

Write each expression in exponential form.

18. $\sqrt{x^3}$

$x^{\frac{3}{2}}$

19. $\sqrt[3]{2y^2}$

$\left(2y^2\right)^{\frac{1}{3}}$

20. $\left(\sqrt[4]{b}\right)^3$

$b^{\frac{3}{4}}$

Make sure you check all your answers!