Name _____ Date _____

Keepin' It Real

Extracting Roots and Rewriting Radicals

Problem Set

Rewrite each expression using rational exponents.

1. $\sqrt{x^3y}$

$\sqrt{x^3y} = (x^3y)^{\frac{1}{2}}$

$= x^{\frac{3}{2}} y^{\frac{1}{2}}$

2. $\sqrt[3]{a^2b^4c^5}$

3. $\sqrt[4]{f^2g^6}$

4. $\sqrt[5]{(x + y)^2}$

5. $\sqrt[3]{\frac{r^2s}{t^4}}$

6. $\sqrt{a^5b}$

7. $\sqrt[4]{\frac{x^2}{y^3}}$

8. $\sqrt[5]{32f^4}$

Rewrite each expression using radicals.

9. $u^{\frac{2}{3}}w^{\frac{5}{3}}$

$u^{\frac{2}{3}}w^{\frac{5}{3}} = (u^2w^5)^{\frac{1}{3}}$

$= \sqrt[3]{u^2w^5}$

10. $x^{\frac{1}{2}}y^{\frac{3}{2}}z^{\frac{7}{2}}$

11. $(a + b)^{\frac{3}{4}}$

12. $f^{\frac{4}{5}}g^{\frac{1}{5}}$

13. $r^{\frac{1}{2}}s^{\frac{3}{4}}$

14. $\frac{a^{\frac{3}{2}}b^{\frac{1}{4}}}{c^{\frac{5}{4}}}$

Name _____ Date _____

15. $x^{\frac{2}{5}}y^{\frac{6}{5}}$

16. $\frac{r^2 s^{\frac{2}{3}}}{t^{\frac{1}{3}}u^{\frac{4}{3}}}$

Simplify each expression.

17. $\sqrt{x^6y^8}$

$\sqrt{x^6y^8} = (x^6y^8)^{\frac{1}{2}}$

$= x^{\frac{6}{2}}y^{\frac{8}{2}}$

$= |x^3|y^4$

18. $\sqrt[3]{a^3b^{12}}$

19. $\sqrt[3]{(x-2)^6}$

20. $\sqrt[3]{(5+x)^{12}}$

21. $\sqrt{25y^8}$

22. $\sqrt{36z^4}$

23. $\sqrt{16x^{10}y^8z^2}$

24. $\sqrt{49x^{12}y^2z^6}$

25. $\sqrt[3]{27x^{15}y^9z^3}$

26. $\sqrt[4]{16x^{12}y^4z^{16}}$