SM 2

Name:_____ Period:_____

3.4 Rational Exponents

Write an equivalent expression using radical notation, and, if possible, simplify.

1. $y^{1/3}$
2. $\left(a^2b^2\right)^{1/5}$
3. $4x^{1/4}$

4. $t^{5/6}$
5. $16^{3/4}$
6. $27^{4/3}$

Write an equivalent expression using rational exponents.

7. $\sqrt[5]{pq}$
8. $\sqrt[4]{10v}$
9. $3\sqrt{z}$

10. $4\sqrt[3]{x^2}$
11. $\sqrt[5]{(3n)^4}$
12. $\left(\sqrt[6]{2a^5b}\right)^7$

Write an equivalent expression using positive exponents and, if possible, simplify.

13. $9^{-1/2}$
14. $27^{-2/3}$
15. $5(xy)^{-4/5}$

Use the laws of exponents to simplify. Use only positive exponents in your answer.

16. $3^{1/7} \cdot 3^{4/7}$

17. $y^{5/4} \cdot y^{-3/4}$

18. $x^{4/5} \cdot x^{7/10}$

19. $\dfrac{m^{7/8}}{m^{3/8}}$

20. $\dfrac{c^{1/2}}{c^{3/4}}$

21. $\dfrac{p}{p^{1/3}}$

22. $\left(h^{2/3}\right)^{3/4}$

23. $\left(n^{-1/6}\right)^{2/3}$

24. $\left(k^{-7/3}\right)^{-6/5}$

Use rational exponents to simplify. Write your final answer in radical form.

25. $\sqrt[9]{q^3}$

26. $\sqrt[4]{a^{18}}$

27. $\left(\sqrt[7]{x^2 y}\right)^{14}$

28. $\sqrt{r} \cdot \sqrt[5]{r^2}$

29. $\dfrac{\sqrt[3]{s}}{\sqrt[4]{s}}$

30. $\sqrt{\sqrt[3]{z}}$