Math on the Fly!

NAME: _____ DATE: _____

Fractional Exponents and Radicals

Simplify each expression below.

1. $49^{1/2}$ **2.** $8^{5/3}$ **3.** $36^{-3/2}$ **4.** $27^{-2/3}$

Write each expression using a single exponent.

5. $\sqrt[7]{x}$ **6.** $\sqrt[3]{x^2}$ **7.** $\sqrt[4]{x} \cdot x$ **8.** $\sqrt[6]{x^5} \cdot \sqrt{x}$

9. $\sqrt{\sqrt[5]{x^3}}$ **10.** $\sqrt[3]{\sqrt[4]{x}} \cdot \sqrt[6]{x^2}$ **11.** $x^3 \cdot \sqrt[7]{x^4}$

Write each expression in radical form under a single root.
Simplify the root, if possible.

12. $x^{8/9}$ **13.** $x^{9/8}$ **14.** $x^{3/4}x$

15. $x^{5/2}x^2x^{2/5}$ **16.** $x \cdot x^{1/2} \cdot x^{1/3} \cdot x^{1/4}$

SOLUTIONS

1. 7

2. 32

3. $\frac{1}{216}$

4. $\frac{1}{9}$

5. $x^{1/7}$

6. $x^{2/3}$

7. $x^{5/4}$

8. $x^{4/3}$

9. $x^{3/10}$

10. $x^{5/12}$

11. $x^{25/7}$

12. $\sqrt[9]{x^8}$

13. $\sqrt[8]{x^9} = x\sqrt[8]{x}$

14. $\sqrt[4]{x^7} = x\sqrt[4]{x^3}$

15. $\sqrt[10]{x^{49}} = x^4\sqrt[10]{x^9}$

16. $\sqrt[12]{x^{25}} = x^2\sqrt[12]{x}$