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Algebra II



## *Fractional Exponents*

**Rewrite the following as radicals**

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

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

3.  $x^{\frac{5}{6}}$

4.  $x^{\frac{1}{3}}$

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

6.  $x^{\frac{1}{2}}$

7.  $x^{\frac{4}{5}}$

8.  $x^{\frac{1}{7}}$

9.  $x^{\frac{5}{2}}$

**Rewrite the following using fractional exponents**

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

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

12.  $\sqrt[4]{x^7}$

13.  $\sqrt{x^3}$

14.  $\sqrt[6]{x^5}$

15.  $\sqrt{x}$

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

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

18.  $\sqrt[3]{x}$

**Evaluate each of the following:**

19.  $25^{\frac{1}{2}}$

20.  $8^{\frac{1}{3}}$

21.  $100^{\frac{1}{2}}$

22.  $4^{\frac{3}{2}}$

23.  $27^{\frac{2}{3}}$

24.  $125^{\frac{5}{3}}$

25.  $8^{\frac{5}{3}}$

26.  $81^{\frac{3}{4}}$

27.  $16^{\frac{3}{2}}$

28.  $16^{\frac{5}{4}}$

29.  $36^{\frac{3}{2}}$

30.  $32^{\frac{2}{5}}$

31. Explain what a rational exponent, such as  $\frac{5}{2}$  means. Use this explanation to evaluate  $9^{\frac{5}{2}}$ .

32. Explain how  $125^{\frac{4}{3}}$  can be evaluated using properties of rational exponents to result in an integer answer.

33. Explain how  $(-8)^{\frac{4}{3}}$  can be evaluated using properties of rational exponents to result in an integer answer.