

**Rational Exponents** – in book: Section 9.2 p. 568

**Evaluate.**

1.  $\sqrt[3]{216}$

2.  $2^{-5} \cdot 2^7$

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

4.  $\left(4^{\frac{7}{3}}\right)^3$

5.  $\left(144^{\frac{1}{2}}\right)^3$

6.  $\left(12^{\frac{2}{3}}\right)^{\frac{3}{2}}$

**Express using rational exponents.**

7.  $\sqrt{x^5 y^6}$

8.  $\sqrt[3]{c^7}$

9.  $\sqrt{144x^6 y^{10}}$

10.  $\sqrt[5]{27x^{10} y^5}$

11.  $\sqrt{1024a^3}$

12.  $\sqrt[4]{36a^8 b^5}$

**Express using radicals.**

13.  $64^{\frac{1}{3}}$

14.  $y^{\frac{3}{2}}$

15.  $2^{\frac{1}{2}} a^{\frac{3}{2}} b^{\frac{5}{2}}$

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

17.  $(s^2 t)^{\frac{1}{3}} v^{\frac{2}{3}}$

18.  $(x^6 y^3)^{\frac{1}{2}} z^{\frac{3}{2}}$

**Simplify.**

19.  $(x^{-2})^3 \cdot (x^3)^{-2}$

20.  $(3y^3)(3y)^3$

21.  $x^7 \cdot x^5 \cdot x^{-7} \cdot x^{-5}$