

Review - Tuesday 3-15-22

$$1. \sqrt[15]{125} = \sqrt[15]{5^3} = 5^{3/15} = 5^{1/5} = \boxed{\sqrt[5]{5}}$$

$$2. \left(\frac{9x^{-8}}{16y^{-12}} \right)^{1/2} = \left(\frac{9y^{12}}{16x^8} \right)^{1/2} = \boxed{\frac{3y^6}{4x^4}}$$

$$3. \sqrt[3]{x^4} \cdot \sqrt{x} = x^{4/3} \cdot x^{1/2} = x^{8/6} \cdot x^{3/6} = x^{11/6} \\ = \sqrt[6]{x^{11}} = \boxed{x \sqrt[6]{x^5}}$$

$$4. (\sqrt[3]{-27})^{-2} = \frac{1}{(-3)^2} = \boxed{\frac{1}{9}}$$

$$5. \sqrt[3]{\frac{7}{x^2}} = \frac{\sqrt[3]{7}}{\sqrt[3]{x^2}} \cdot \frac{\sqrt[3]{x}}{\sqrt[3]{x}} = \boxed{\frac{\sqrt[3]{7x}}{x}}$$

$$6. \left(\frac{1}{27} \right)^{-2/3} = \left(\frac{27}{1} \right)^{2/3} = (\sqrt[3]{27})^2 = 3^2 = \boxed{9}$$

$$7. \frac{x^{-1/3} y}{x^{-2} y^{4/7}} = \frac{x^2 y}{x^{1/3} y^{4/7}} = \frac{x^{6/2} y^{7/7}}{x^{1/3} y^{4/7}} = \boxed{x^{5/3} y^{3/7}}$$

$$8. \frac{81}{3^{2/3}} = \frac{3^4}{3^{2/3}} = \frac{3^{12/3}}{3^{2/3}} = 3^{10/3} = \sqrt[3]{3^{10}} = 3^3 \sqrt[3]{3} \\ = \boxed{27 \sqrt[3]{3}}$$

$$9. (x^{1/2} \cdot x^{2/3})^{1/3}$$

$$(x^{3/6} \cdot x^{4/6})^{1/3} = (x^{7/6})^{1/3} = x^{7/18} = \boxed{\sqrt[18]{x^7}}$$

$$10. \left(\frac{3x^3 y^2 x^2 y}{x^4 y^{-3}} \right)^2 = \left(\frac{3x^5 y^3}{x^4 y^{-3}} \right)^2 = \frac{9x^{10} y^6}{x^8 y^{-6}}$$

$$= \boxed{9x^2 y^{12}}$$

$$11. x^{1/2} y^{1/3} z = x^{3/6} y^{2/6} z^{6/6}$$

$$= \sqrt[6]{x^3 y^2 z^6} = \boxed{z \sqrt[6]{x^3 y^2}}$$