

1. Simplify by first writing in radical form.

$$a) 25^{\frac{3}{2}} = (\sqrt{25})^3 = 5^3 = \boxed{125}$$

$$b) (-32)^{1/5} = \sqrt[5]{-32} = \boxed{-2}$$

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

2. Rewrite each expression with rational exponents.

$$a) \sqrt{17} = \boxed{17^{1/2}}$$

$$b) \sqrt[3]{17} = \boxed{17^{1/3}}$$

$$c) \sqrt[7]{x^4} = \boxed{x^{4/7}}$$

3. Simplify. Write your answers in exponential form with only positive exponents. Assume all variables represent positive numbers.

$$a) 2^{\frac{2}{5}} \cdot 2^{\frac{3}{5}} = 2^{\frac{2}{5} + \frac{3}{5}} = 2^{\frac{5}{5}} = 2^1 = \boxed{2}$$

$$b) \left(32^{\frac{2}{3}}\right)^{\frac{3}{5}} = 32^{\frac{2}{3} \cdot \frac{3}{5}} = 32^{\frac{2}{5}} = (\sqrt[5]{32})^2 = 2^2 = \boxed{4}$$

$$c) \frac{x^{1/4}}{x^{-3/5}} = x^{\frac{1}{4} - (-\frac{3}{5})} = \boxed{x^{\frac{17}{20}}}$$

$$d) \left(y^{-\frac{3}{4}}\right)^{\frac{1}{6}} = y^{-\frac{3}{4} \cdot \frac{1}{6}} = y^{-\frac{1}{8}} = \boxed{\frac{1}{y^{1/8}}}$$

$$e) (x^8 y^{2/3})^{1/4} = (x^8)^{1/4} (y^{2/3})^{1/4} = x^{8 \cdot \frac{1}{4}} y^{\frac{2}{3} \cdot \frac{1}{4}} = \boxed{x^2 y^{1/6}}$$

Q: What are the next two letters in the following series and why?

W A T N T L I T F S _ _