

Simplify each.

1. $\left(\frac{4a^{\frac{5}{6}}b^{-\frac{7}{4}}}{2^{-2}a^{-3}b^2}\right)^{-\frac{3}{4}}$

2. $\sqrt{432a^{12}b^{-16}}$

3. $\sqrt[3]{135c^{15}d^{24}}$

Simplify each.

1. $\left(\frac{4a^{\frac{5}{6}}b^{-\frac{7}{4}}}{2^{-2}a^{-3}b^2}\right)^{-\frac{3}{4}}$

$$= (4 \cdot 2^2 a^{\frac{5}{6} - (-3)} b^{-\frac{7}{4} - 2})^{-\frac{3}{4}}$$

$$= (16 a^{\frac{23}{6}} b^{-\frac{15}{4}})^{-\frac{3}{4}}$$

$$= 16^{-\frac{3}{4}} a^{\frac{23}{6} \cdot -\frac{3}{4}} b^{-\frac{15}{4} \cdot -\frac{3}{4}}$$

$$= 16^{-\frac{3}{4}} a^{-\frac{23}{8}} b^{\frac{45}{16}}$$

$$= \frac{b^{\frac{45}{16}}}{16^{\frac{3}{4}} a^{\frac{23}{8}}}$$

$$= \frac{b^{\frac{45}{16}}}{(4\sqrt{16})^3 a^{\frac{23}{8}}}$$

$$= \frac{b^{\frac{45}{16}}}{8 a^{\frac{23}{8}}}$$

2. $\sqrt{432a^{12}b^{-16}}$
144 · 3

$$= 12a^6b^{-8}\sqrt{3}$$

$$= \frac{12a^6\sqrt{3}}{b^8}$$

3. $\sqrt[3]{135c^{15}d^{24}}$
27 · 5

$$= 3c^5d^8\sqrt[3]{5}$$

ANSWERS