Bellwork Alg 2 Tuesday, January 28, 2020

Rewrite and simplify each expression using properties of exponents. Make sure your answer has no exponents that are negative or zero.

1. $\left(\frac{ab^5}{a^{\frac{1}{4}}}\right)^{\frac{4}{5}}$

2. $\left(k^{\frac{7}{6}}\right)^{-3}$

3. $\left(25^{\frac{3}{4}}m^{\frac{5}{2}}n^{-6}\right)^{\frac{2}{3}}$

Bellwork Alg 2 Tuesday, January 28, 2020 ANSWERS

Rewrite and simplify each expression using properties of exponents. Make sure your answer has no exponents that are negative or zero.

1. $\left(\frac{ab^5}{a^{\frac{1}{4}}}\right)^{\frac{4}{5}} = \left(a^{1-1/4}\, b^5\right)^{4/5} = \left(a^{3/4}\, b^5\right)^{4/5}$

$= \left(a^{3/4}\right)^{4/5} \left(b^5\right)^{4/5}$

$= a^{\frac{3}{4}\cdot\frac{4}{5}}\, b^{5\cdot\frac{4}{5}}$

$= \boxed{a^{3/5}\, b^4 \text{ or } \sqrt[5]{a^3}\, b^4}$

2. $\left(k^{\frac{7}{6}}\right)^{-3} = \frac{1}{\left(k^{\frac{7}{6}}\right)^3} = \frac{1}{k^{\frac{7}{6}\cdot 3}} = \boxed{\frac{1}{k^{\frac{7}{2}}} \text{ or } \frac{1}{\sqrt{k^7}}}$

3. $\left(25^{\frac{3}{4}} m^{\frac{5}{2}} n^{-6}\right)^{\frac{2}{3}} = \left(\frac{25^{\frac{3}{4}}\, m^{\frac{5}{2}}}{n^6}\right)^{2/3} = \frac{\left(25^{3/4}\right)^{2/3} \left(m^{5/2}\right)^{2/3}}{\left(n^6\right)^{2/3}}$

$= \frac{25^{3/4\cdot 2/3}\; m^{5/2\cdot\frac{2}{3}}}{n^{6\cdot 2/3}}$

$= \frac{25^{1/2}\, m^{5/3}}{n^4} = \frac{\sqrt{25}\,\sqrt[3]{m^5}}{n^4}$

$= \boxed{\frac{5\sqrt[3]{m^5}}{n^4} \text{ or } \frac{5\, m^{5/3}}{n^4}}$