

Simplify each expression. Leave your answer in exponent form.

1) $y^{\frac{2}{5}} \cdot y^{\frac{3}{10}}$

2) $(a^{-1}b^{\frac{1}{2}}) \cdot (a^3b^{\frac{2}{3}})$

3) $(-3a^{-\frac{2}{3}})(5a^{-\frac{1}{3}})$

4) $(2a^{\frac{1}{4}})^2$

5) $(m^2n^3)^{\frac{3}{4}}$

6) $(9x^4y^{-2})^{-\frac{1}{2}}$

7) $\frac{a^{-\frac{1}{3}}}{a^{\frac{5}{6}}}$

8) $\frac{-24x^{\frac{1}{5}}}{4x^{-\frac{3}{10}}}$

9) $\frac{5a^{\frac{3}{4}}b^{\frac{1}{2}}}{10a^{\frac{1}{3}}b^{\frac{1}{2}}}$

10) $\left(\frac{81y^{16}}{16x^{12}}\right)^{\frac{1}{2}}$

11) $\left(a^{\frac{2}{3}}\right)^2 \cdot \left(a^{\frac{5}{3}}\right)^3$

12) $\left(\frac{x^{\frac{1}{4}}}{x^{-\frac{3}{4}}}\right)^{-8}$