Examples:

① $x^4 \cdot x^2 y^3 = x^6 y^3$

② $\dfrac{(4x)^3}{4x^3} = \dfrac{64x^3}{4x^3} = 16$

③ $\dfrac{x^2(y^3z)^3}{(x^2y)^2z} = \dfrac{x^2 y^9 z^3}{x^4 y^2 z} = \dfrac{y^7 z^2}{x^2}$

④ $(2y^4)^3 = 8y^{12}$

⑤ $\dfrac{3(x^3)^4 y^5}{3x^7} = \dfrac{3x^{12} y^5}{3x^7} = x^5 y^5$

⑥ $\dfrac{y^4}{y^0} \quad 2 = y^4$

⑦ $-(3x^3)^2 = -9x^6$

⑧ If $a = 3$ and $b = -2$, what is the value of the expression $\dfrac{a^{-2}}{b^{-3}}$?

$\dfrac{b^3}{a^2} = \dfrac{(-2)^3}{(3)^2} = \dfrac{-8}{9}$

⑨ $\dfrac{a^2 b^{-3}}{a^{-4} b^2} = \dfrac{a^2 \cdot a^4}{b^2 \cdot b^3} = \dfrac{a^6}{b^5}$

⑩ $8^{-4} \cdot 8^6 = 8^2 = 64$

⑪ Simplify the expression $\dfrac{3x^{-4} y^5}{(2x^3 y^{-7})^{-2}}$ and write the answer using only positive exponents.

$\dfrac{3x^{-4} y^5}{2^{-2} x^{-6} y^{14}} = \dfrac{3 \cdot 2^2 \cdot x^6 \cdot y^5}{x^4 y^{14}} = \dfrac{12x^2}{y^9}$

⑫ In simplest form, express $\dfrac{x + y^{-1}}{y + x^{-1}}$ with no negative exponents.

$\dfrac{x + \frac{1}{y}}{y + \frac{1}{x}} \quad \nearrow \quad \dfrac{\frac{xy+1}{y}}{\frac{xy+1}{x}} = \dfrac{xy+1}{y} \cdot \dfrac{x}{xy+1} = \dfrac{x}{y}$