

Zero and Negative Exponents

Zero as an exponent.

$$a) 4^0 = 1 \quad b) (-3)^0 = 1 \quad c) (5.14)^0 = 1 \quad d) X^0 = 1$$

Negative exponents

$$a) 7^{-3} = \frac{1}{7^3} \quad b) (-5)^{-2} = \frac{1}{(-5)^2} \quad c) X^4 Y^{-3} = \frac{X^4}{Y^3}$$

Simplify.

$$① 4^{-3} = \frac{1}{4^3} = \boxed{\frac{1}{64}}$$

$$② \frac{6X^{-3}Z^{-5}}{Y^{-4}} = \boxed{\frac{6Y^4}{X^3Z^5}}$$

③ What is the value of $5x^2y^{-3}$ for $x=6$ and $y=3$?

$$\begin{aligned} 5x^2y^{-3} &= \frac{5x^2}{y^3} \\ &= \frac{5(6^2)}{3^3} \\ &= \frac{5(36)}{27} \\ &= \frac{20}{3} = \boxed{6\frac{2}{3}} \end{aligned}$$