

Negative Exponents

Zero Exponents	For any nonzero number a , $a^0 = 1$
Negative Exponents	For any nonzero number a and any integer n , $a^{-n} = \frac{1}{a^n}$ and $\frac{1}{a^{-n}} = a^n$

In English: _____

Simplify.

1. 5^{-3}	2. $(-3)^{-2}$	3. $(-4)^{-1}$
4. $\left(\frac{1}{3}\right)^{-3}$	5. $2x^{-1}$	6. $m^{-3}n^2$
7. $-5a^{-3}b^{-2}c$	8. $\left(\frac{2}{5}\right)^{-2}$	9. $x^4 \cdot x^{-7}$

10. $(-3m)^{-2}$	11. $-3m^{-2}$	12. $\frac{-3}{m^{-2}}$
13. $5^{-1} \cdot 5^{-3}$	14. $\frac{x^2}{x^7}$	15. $\frac{x^4 y}{xy^4}$
16. $\frac{m^{-4}}{m^{-1}}$	17. $\frac{r^{-5}}{r}$	18. $\frac{xy}{x^2 y^2}$
19. $\frac{a^7 \cdot a^{-3}}{a^5}$	20. $\frac{x^{-1} \cdot x^{-3}}{x^{-2}}$	21. $\frac{p^5 \cdot p^4}{p^{10}}$