Exponent Rules

Name: _____

Exponent Rules

$a^0 = 1$ $\quad a^m \cdot a^n = a^{m+n}$ $\quad (a^m)^n = a^{m\times n}$ $\quad (ab)^n = a^n b^n$ $\quad a^{-n} = \dfrac{1}{a^n}$

$a^1 = a$ $\quad \dfrac{a^m}{a^n} = a^{m-n}$ $\quad a^{1/n} = \sqrt[n]{a}$ $\quad \left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}$ $\quad \left(\dfrac{a}{b}\right)^{-n} = \left(\dfrac{b}{a}\right)^n$

Simplify as much as possible using only **positive** exponents. Do not use a calculator!

A. 5^{-1}

B. $(-3)^{-1}$

C. $\left(\dfrac{1}{2}\right)^{-1}$

D. 5^{-2}

E. $(-3)^{-2}$

F. $\left(\dfrac{1}{2}\right)^{-3}$

G. $\dfrac{5^{202}}{5^{200}}$

H. $\dfrac{3^{200}}{3^{202}}$

I. $\dfrac{2^{-300}}{2^{-305}}$

J. $\left(\dfrac{5}{x}\right)^{-2}$

K. $\left(\dfrac{-3x}{y^3}\right)^{-2}$

L. $-\left(-\dfrac{x^2}{2}\right)^{-3}$

M. $\left(5xy^{-4}\right)^{-1}$

N. $\left(-3x^3\,y^{-4}\right)^{-2}$

O. $\left(-\dfrac{x^{-2}}{2y^{-4}}\right)^{-3}$