9/26 **Unit 2** Polynomials

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10:52 AM

Exponent Rules

Rule #1: $x^0 = 1$

* be careful negative #'s have to be in (parentheses)

-2^0 NOT the same as $(-2)^0$

$-2^0 \rightarrow -1$ $\quad (-2)^0 \rightarrow 1$

EXS: ① $5^0 = 1$ ② $(5x)^0 = 1$ ③ $5x^0$ means $5 \cdot x^0$, $5 \cdot 1$, 5

④ $8x^0 + (12x)^0$

$8 \cdot 1$

$8 + 1 = 9$

Rule #2: $x^{-1} = \frac{1}{x^1}$

EXS:

① $3^{-1} = \frac{1}{3^1} = \frac{1}{3}$ ② $a^{-1} = \frac{1}{a^1} = \frac{1}{a}$

③ $y^{-3} = \frac{1}{y^3}$ ④ $(-2)^{-1} = \frac{1}{(-2)^1} = \frac{1}{-2}$ same as $-\frac{1}{2}$

⑤ $\left(\frac{2}{3}\right)^{-1} = \frac{3}{2}$ ↖ fraction = flip

Why? $\frac{1}{\left(\frac{2}{3}\right)^1} = \frac{1}{\frac{2}{3}}$ KCF $1 \cdot \frac{3}{2} = \frac{3}{2}$

⑥ $\left(\frac{a}{b}\right)^{-1} = \frac{b}{a}$

Rule #3: $x^{-n} = \left(\frac{1}{x}\right)^n = \frac{1^n}{x^n}$

Exs

① $2^{-2} = \left(\frac{1}{2}\right)^2 = \frac{1^2}{2^2} = \frac{1}{4}$

② $3^{-2} = \left(\frac{1}{3}\right)^2 = \frac{1^2}{3^2} = \frac{1}{9}$

③ $\left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3 = \frac{3^3}{2^3} = \frac{27}{8}$

Algebra

① $m^{-3} = \left(\frac{1}{m}\right)^3 = \frac{1^3}{m^3} = \frac{1}{m^3}$

② $2m^{-3}$ means $2 \cdot m^{-3} \Rightarrow 2\left(\frac{1}{m}\right)^3 = 2\left(\frac{1^3}{m^3}\right) = 2\left(\frac{1}{m^3}\right) = \frac{2}{m^3}$

③ $(2m)^{-3} = \left(\frac{1}{2m}\right)^3 = \frac{1^3}{(2m)^3} = \frac{1}{8m^3}$

$(2m)^3 = 2m \cdot 2m \cdot 2m$