October 18, 2016

5.4 Addition of Polynomials

$1(-7x^2 + 3x) + 1(4x^2 - 5x + 2)$

$-7x^2 + 3x + 4x^2 - 5x + 2$

$-7x^2 + 4x^2 + 3x - 5x + 2$

$x^2(-7+4) + x(3+(-5))$ (like, like)

$-3x^2 - 2x + 2$

Degree: 2

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$(-7x^2y + 3xy^2 + 5) + (xy^2 - x^2y)$

$-7x^2y + 3xy^2 + 5 + xy^2 - x^2y$

$-7x^2y - x^2y$

$x^2y(-7 + (-1))$

$-8x^2y + 4xy^2 + 5$

Degree: 3

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$-5 = (-1) \cdot 5$

$-1(a+b) = -a + (-b)$

$= -a - b$

$1 \cdot \frac{5}{1}$

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$1(5x^2 + 2x) - 1(3x^2 + 8x)$

$5x^2 + 2x - 3x^2 - 8x$

$2x^2 - 6x$

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$(-5x^2 + 2x - 3) - (x^2 + 2x) + (5x^2 - 2)$

$-5x^2 + 2x - 3 - x^2 - 2x + 5x^2 - 2$

$-x^2 - 5$

Degree: 2

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5.5 Laws of Exponents

a^n ← Exponent

a ← Base

meaning: $a^n = a \cdot a \cdot a \cdots a^n$

$x^3 = x \cdot x \cdot x$

Base

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① Product Rule

$x^3 \cdot x^2 = x \cdot x \cdot x \cdot x \cdot x$

$= x^5$

$x^3 \cdot x^2 = x^{3+2=5} = x^5$

same Base

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$x^3 + x^2 = ?$

not like

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② Power Rule

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

$= x \cdot x \cdot x \cdot x \cdot x \cdot x$

$= x^6$

$(x^{3 \cdot 2})^{=6} = x^6$

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③ Quotient Rule

$\frac{x^3}{x^2} = \frac{x \cdot x \cdot x}{x \cdot x}$

$= 1 \cdot 1 \cdot x$

$= x^1$

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

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$\frac{x^2}{x^3} = \frac{x \cdot x}{x \cdot x \cdot x}$?

$= \frac{1}{1} \cdot \frac{1}{1} \cdot \frac{1}{x}$

$= \frac{1}{x}$

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

$= x^{-1} = \frac{1}{x}$

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$\frac{x^2}{x^3} = \frac{x \cdot x}{x \cdot x \cdot x} \; 1$

$= 1 \cdot 1 \cdot \frac{1}{x} = \frac{1}{x}$

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Negative Exponents

① $a^{-n} = \frac{1}{a^n}$

$2^{-3} = \frac{1}{2^3} = \frac{1}{2 \cdot 2 \cdot 2} = \frac{1}{8}$

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