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Negative expressions. 19/02/20

$a^{-n} = 1/a^n = \frac{1}{a^n}$

(45) Simplify Remember $Cx^{-1} \neq (Cx)^{-1}$

$C \cdot \frac{1}{x} \neq \frac{1}{Cx}$

$\frac{5a^{-1} + (5a)^{-1}}{a^{-1} + 5a^{-2}}$

$(5a^{-1}) = \frac{1}{5a}$

$5a^{-1} = 5 \cdot \frac{1}{a} = \frac{5}{a}$ "Stays up in the numerator".

Continue exercise.

$= \frac{\frac{5}{a} + \frac{1}{5a}}{\frac{1}{a} + \frac{5}{a^2}}$ = Jealous

$= \frac{\frac{5}{a}\frac{5}{5}\frac{a}{a} + \frac{1(a)}{(5)(a)(a)}}{\frac{1(5)(a)}{a(5)(a)} + \frac{5(5)}{(a)(a)(5)}} = \frac{\frac{25a}{5a^2} + \frac{a}{5a^2}}{\frac{5a}{5a^2} + \frac{25}{5a^2}}$

$= \frac{25a + a}{5a + 25} = \frac{26a}{5(a+5)}$ "Remember with Big fractions to compare every term with each other".

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"Remember with Big fractions to compare every item with each other".

6.4 Dividing Polynomials.

only 1 term in denom, draw the hearth.

$$\frac{P(x) + Q(x)}{R(x)} = \frac{P(x)}{R(x)} + \frac{Q(x)}{R(x)}$$

Ex) $\frac{15x^2y^2 + 18xy^2 - 9y^2}{3x^2y} = \frac{15x^2y^2}{3x^2y} + \frac{18xy^2}{3x^2y} - \frac{9y^2}{3x^2y}$

$= 5y + 6x^{-1}y - \frac{3y}{x^2} \rightarrow 3yx^{-2}$

$\downarrow$

$\frac{6y}{x}$

Remember $a^{-n} = \frac{1}{a^n}$

Dividing a Polynomial By another Polynomial. Long Division

$296/7 \Longrightarrow$

$$\begin{array}{r} 42 \\ 7\overline{)296} \\ -28 \\ \hline 16 \\ -14 \\ \hline 2 \end{array}$$

Remainder

R: $42 \frac{2}{7}$ → Remainder, → Divisor

(9) $\frac{2x^2 + 9x + 7}{(x+1)}$

$$\begin{array}{r|l|l} & 2x & 7 \\ \hline (x+1)\ 2x^2 & +9x & +7 \\ -2x^2 & -2x & \\ \hline 0 & 7x & +7 \\ & -7x & -7 \\ \hline & 0 & 0 \end{array}$$

Answer comes as.

$$\text{Quotient} + \frac{\text{Remainder}}{\text{Denominator}}$$

$$2x+7 + \frac{0}{(x+1)} = \boxed{2x+7}$$

Remember to change the sign when subtracting in the Box.

(17) $(2x^5 - 9x^3 - 8x^2 - 8x - 8) \div (x^2+1)$

		$2x^3$		$-11x$	-8
x^2+1	$2x^5$	$+0x^4$	$-9x^3$	$-8x^2$	$-8x$	-8
	$-2x^5$		$-2x^3$			
	0		$-11x^3$	$-8x^2$	$-8x$	-8
			$+11x^3$		$+11x$	
			0	$-8x^2$	$+3x$	-8
				$+8x^2$		$+8$
				0	$+3x$	0

$$\text{Quotient} + \frac{\text{Remainder}}{\text{Denominator}}$$

$$2x^3 - 11x - 8 + \frac{+3x}{(x^2+1)} = \boxed{2x^3 - 11x - 8 + \frac{3x}{(x^2+1)}}$$

✓✓

$(8x^3 + 23x^2 + 9x - 36) \div (2x + 6)$

$$
\begin{array}{r|l}
2x+6 & 4x^2 - \frac{1}{2}x + 3 \\
\hline
8x^3 + 23x^2 + 9x + 36 & \\
-8x^3 - 24x^2 & \\
\hline
0 - x^2 + 9x + 36 & \\
+x^2 + 3x & \\
\hline
12x + 36 & \\
-6x - 18 & \\
\hline
0 \quad 18 &
\end{array}
$$

$$\frac{\text{Rem}}{\text{Dnom}} \longrightarrow 4x^2 + \frac{1}{2}x + 3 + \frac{18}{2x+6}$$

$\times$ ⇩ answer

$$
\begin{array}{r|l}
2x+6 & 4x^2 - \frac{1}{2}x + 6 \\
\hline
8x^3 + 23x^2 + 9x + 36 & \\
-8x^3 - 24x^2 & \\
\hline
0 - x + 9x + 36 & \\
+x + 3x & \\
\hline
12x + 36 & \\
-12x - 36 & \\
\hline
0 \quad 36 &
\end{array}
$$

$$4x^2 - \frac{1}{2}x + 6 + \frac{36}{2x+6} = 4x^2 - \frac{1}{2}x + 6$$