March 5

Add/Subtract Rational Expressions With Common Denominators

Ex1 Simplify: $\frac{7x}{x+5} + \frac{(3x+1)}{x+5} = \frac{7x+(3x+1)}{x+5}$ * Keep the common denominators!

LCD: $x+5$

$= \frac{7x+3x+1}{x+5}$

$= \boxed{\frac{(10x+1)}{(x+5)}}$ * Factor and cancel if possible.

Ex2 Simplify: $\frac{(3m-4)}{5m^2} - \frac{(2m-3)}{5m^2} = \frac{(3m-4)-(2m-3)}{5m^2}$

LCD: $5m^2$

$= \frac{3m-4-2m+3}{5m^2}$

$= \boxed{\frac{(m-1)}{5m^2}}$

Ex3 Simplify: $\frac{x}{x^2+3x-10} + \frac{5}{x^2+3x-10} = \frac{x+5}{x^2+3x-10}$

LCD: $x^2+3x-10$

$x^2+3x-10$

$x^2 \cdot -10 = -10x^2$

$5x + -2x = 3x$

$\frac{x^2+5x}{x} \quad \frac{-2x-10}{-2}$

$x(x+5) \quad -2(x+5)$

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

$= \frac{(x+5)}{(x+5)(x-2)}$

$= \boxed{\frac{1}{(x-2)}}$

Finding a Least Common Denominator

Ex4 Find the LCD for: $\frac{3}{(x-6)} + \frac{4}{x^2-8x+12}$

$\frac{4}{(x-2)(x-6)}$

$x^2 - 8x + 12$

$x^2 \cdot 12 = 12x^2$

$-2x + -6x = -8x$

$\frac{x^2}{x} - \frac{2x}{x} \mid \frac{-6x}{-6} + \frac{12}{-6}$

$x(x-2) \mid -6(x-2)$

$(x-2)(x-6)$

LCD: $(x-6)(x-2)$

Ex5 Find the LCD for: $\frac{8x+4}{(x-4)} - \frac{2x+7}{(x+4)}$

LCD: $(x-4)(x+4)$

Ex6 Find the LCD for: $\frac{k-1}{(k+3)(k-3)} + \frac{k-7}{(k+3)(k+3)}$

LCD: $(k+3)(k-3)(k+3)$

Ex7 Find the LCD for: $\frac{17}{10x^3y^6} - \frac{1}{6x^4y^4}$

10: 10, 20, 30, 40,

6: 6, 12, 18, 24, 30

LCD: $30x^4y^6$

*use biggest exponent in LCD!