

Adding and Subtracting Rational Expressions

- Factor all expressions if possible. (Start with the GCF)
- Cancel common factors within individual fractions if possible.
- **Do not cancel factors diagonally. Diagonal simplification is possible only for multiplication.**
- Find the common denominator and express each fraction with this denominator.
- Carry out the addition and/or subtraction.

- **When subtracting a fraction, remember to put the numerator of this fraction in brackets. This will prompt you to distribute the negative sign in front of the brackets to the entire numerator.**

Example 1:

$$\frac{2x + 5}{x - 1} + \frac{8x}{2x - 2}$$

Example 2:

$$\frac{x + 6}{5x} - \frac{8 + x}{5x}$$

Example 3:

$$\frac{a - 2b}{3} - \frac{3a + 6b}{6} + \frac{a - b}{12}$$

Example 4:

$$\frac{x}{5x - 20} + \frac{3 + x}{x - 4} - \frac{12 - x}{10x - 40}$$

Example 5:

$$\frac{x+5}{x^2+2x-8} + \frac{x-1}{x^2+x-6} - \frac{x}{x^2+7x+12}$$