

ADDITION AND SUBTRACTION OF FRACTIONS

Example 1: $\frac{2}{5} + \frac{1}{5} = \frac{2+1}{5} = \frac{3}{5}$

Example 2: $\frac{2}{3} + \frac{4}{5} = \frac{5 \cdot 2 + 3 \cdot 4}{15} = \frac{22}{15}$

Example 3: $\frac{2}{5} + \frac{3}{10} = \frac{2 \cdot 2 + 1 \cdot 3}{10} = \frac{7}{10}$

Example 4: $\frac{2}{x+1} + \frac{3}{x+1} = \frac{2+3}{x+1} = \frac{5}{x+1}$

Example 5: $\frac{2}{x+1} + \frac{3}{x+2} = \frac{(x+2) \cdot 2 + (x+1) \cdot 3}{(x+1)(x+2)} =$

$$\left. \begin{array}{l} x+1 \neq n(x+2) \\ x+2 \neq k(x+1) \end{array} \right\} = \frac{2x+4 + 3x+3}{(x+1)(x+2)} = \frac{5x+7}{(x+1)(x+2)}$$

Example 6: $\frac{5}{6} + \frac{2}{45} = \frac{15 \cdot 5 + 2 \cdot 2}{90} = \dots$

$$6 \cdot 45 = 270$$

Prime numbers: ~~1~~, 2, 3, ~~4~~, 5, ~~6~~, 7, ...

$$\begin{array}{r} 6 \overline{) 270} \\ \underline{3} \\ \textcircled{1} \end{array}$$

$$6 = 2 \cdot 3$$

$$\begin{array}{r} 45 \overline{) 270} \\ \underline{15} \\ \textcircled{1} \end{array}$$

$$45 = 3^2 \cdot 5$$

$$2 \cdot 3^2 \cdot 5 = 90$$

Example 7: $\frac{2}{(x+1)(x+2)} + \frac{3}{(x+2)(x+3)}$

$$= \frac{(x+3) \cdot 2 + (x+1) \cdot 3}{(x+1)(x+2)(x+3)} = \dots$$

Example 8: $\frac{2}{x^2+5x+6} + \frac{3}{x^2+4x+4}$

$$= \frac{2}{(x+2)(x+3)} + \frac{3}{(x+2)^2}$$

$$= \frac{(x+2) \cdot 2 + (x+3) \cdot 3}{(x+2)^2(x+3)} = \dots$$

Example 8:

$$\frac{1}{1} + \frac{2}{x+1} = \frac{(x+1) \cdot 1 + 1 \cdot 2}{x+1} = \frac{x+3}{x+1}$$

$$\frac{1}{1} - \frac{3}{x-1} = \frac{(x-1) \cdot 1 - 1 \cdot 3}{x-1} = \frac{x-4}{x-1}$$

$$= \frac{x+3}{x+1} \cdot \frac{x-1}{x-4} = \frac{(x+3)(x-1)}{(x+1)(x-4)} = \dots$$