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Adding \rightarrow Sub. Fractions:

$$\frac{4}{9} - \frac{2}{7} = \frac{28-18}{63} = \boxed{\frac{10}{63}}$$

$$\begin{aligned} 13 - \frac{12}{x+4} &= \frac{13}{1} - \frac{12}{x+4} \\ &= \frac{13(x+4) - 12}{x+4} \\ &= \frac{13x + 52 - 12}{x+4} \\ &= \boxed{\frac{13x + 40}{x+4}} \end{aligned}$$

Domain: All \mathbb{R} except -4 .

$$\begin{aligned} \# \frac{5}{x-1} - \frac{2}{1} &= \frac{5-2(x-1)}{x-1} \\ &= \frac{5-2x+2}{x-1} = \boxed{\frac{7-2x}{x-1}} \end{aligned}$$

Domain: All real no. except 1 .

When denominators are opposites:

$$\# \frac{13}{x-3} + \frac{16}{3-x}$$

$$= \frac{13}{x-3} - \frac{16}{x-3}$$

$$= \frac{13-16}{x-3}$$

$$= \boxed{\frac{-3}{x-3}}$$

I) Rewrite 2nd denom.
as its opposites.

II) Change the sign betⁿ
the fractions.

Domain: all real no. except 3.

$$\# \frac{1}{x^2-4x-5} - \frac{x}{x^2-11x+30}$$

$$= \frac{1}{x^2-5x+x-5} - \frac{x}{x^2-5x-6x+30}$$

$$= \frac{1}{x(x-5)+1(x-5)} - \frac{x}{x(x-5)-6(x-5)}$$

$$= \frac{1}{(x-5)(x+1)} - \frac{x}{(x-5)(x-6)}$$

$$= \frac{x-6-x-x^2}{(x-5)(x-6)(x+1)} = \boxed{\frac{-x^2-6}{(x-5)(x-6)(x+1)}}$$

Domain: all real no. except 5, 6, -1

Complex Fractions:

$$\frac{\frac{x^2 + 5x + 6}{x^2 - 9}}{\frac{x^2 - 3x - 10}{3x - 15}}$$

$$\Rightarrow \frac{x^2 + 5x + 6}{x^2 - 9} \div \frac{x^2 - 3x - 10}{3x - 15}$$

$$= \frac{x^2 + 5x + 6}{x^2 - 9} \times \frac{3x - 15}{x^2 - 3x - 10}$$

$$= \frac{\cancel{(x+3)} \cancel{(x+2)}}{\cancel{(x+3)} (x-3)} \times \frac{3 \cancel{(x-5)}}{\cancel{(x-5)} \cancel{(x+2)}}$$

$$= \frac{3}{x-3}$$

Domain : all real no. except 3.

A = lw

$$\frac{A_{\text{shaded}}}{A_{\text{total}}} = \frac{\frac{x+5}{2} \cdot \frac{x+5}{2}}{\frac{(x+5)(2x+3)}{1}} = \frac{\frac{(x+5)(x+5)}{4}}{(x+5)(2x+3)}$$

$$\frac{(x+5)(x+5)}{4} \times \frac{1}{\cancel{(x+5)}(2x+3)}$$

$$= \frac{x+5}{4(2x+3)}$$

Domain: all real no. except $-\frac{3}{2}$.