

$$\textcircled{1} \frac{x}{7x^2+34x-5} + \frac{5}{7x^2+34x-5}$$

ADDING / SUBTRACTING  
RATIONAL EXPRESSIONS  
(SAME DENOMINATORS)

KEY\*

$$\frac{x+5}{7x^2+34x-5}$$

$$\frac{x+5}{(7x-1)(x+5)}$$

$$\frac{\cancel{x+5}}{(7x-1)\cancel{(x+5)}}$$

$$\frac{1}{7x-1}$$

1. ADD/SUBTRACT TOP PARTS  
AND PUT INTO SINGLE FRACTION

2. FACTOR TOP  
FACTORS BOTTOM

3. CANCEL IF POSSIBLE

$$\textcircled{2} \frac{5x^2-9x+30}{x^2-6x-27} - \frac{4x^2-5x+51}{x^2-6x-27}$$

$$\frac{5x^2-9x+30-4x^2+5x-51}{x^2-6x-27}$$

$$\frac{x^2-4x-21}{x^2-6x-27} \text{ (PSP)}$$

$$\text{ (PSD)}$$

$$\frac{(x-7)(x+3)}{(x-9)(x+3)}$$

$$\frac{x-7}{x-9}$$

$$\textcircled{3} \frac{x+5}{x-3} - \frac{13x+26}{x^2-x-6} \text{ (PSD)}$$

ADDING / SUBTRACTING RATIONAL  
EXPRESSIONS (DIFF. DENOMINATORS)

STEP 1: FACTOR ALL THE DENOMINATORS

$$\frac{x+5}{x-3} - \frac{13x+26}{(x-3)(x+2)}$$

STEP 2: FIGURE OUT THE LCD AND REWRITE  
EACH FRACTION WITH THAT DENOMINATOR

$$\frac{(x+5)(x+2)}{(x-3)(x+2)} - \frac{13x+26}{(x-3)(x+2)}$$

STEP 3: GET RID OF PARENS. ON TOP

$$\frac{x^2+2x+5x+10}{(x-3)(x+2)} - \frac{13x+26}{(x-3)(x+2)}$$

$$\frac{x^2+7x+10}{(x-3)(x+2)} - \frac{13x+26}{(x-3)(x+2)}$$

STEP 4: ADD / SUBTRACT THE TOP PARTS

$$\frac{x^2+7x+10-13x-26}{(x-3)(x+2)}$$

$$\frac{x^2-6x-16}{(x-3)(x+2)} \text{ (PSP)}$$

$$\frac{(x-8)(x+2)}{(x-3)(x+2)}$$

STEP 5: FACTOR TOP PART

STEP 6: CANCEL IF POSSIBLE

$$\frac{x-8}{x-3}$$