

# 4.3: Add/Subtract w/ common denominator

Steps: 1) Get a common denominator  
(These already have that :))

2) combine numerators

3) clean up numerator

4) simplify (factor & cancel, if possible)

Ex 1)  $\frac{7x}{x+5} + \frac{3x+1}{x+5} = \frac{7x+3x+1}{x+5} = \frac{10x+1}{x+5}$   $x+5 \neq 0$   
 $x \neq -5$

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

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

$\frac{5m^2 \neq 0}{5} \Rightarrow \frac{0}{5}$

$\sqrt{m^2 \neq 0}$   
 $m \neq 0$

You try:  $\frac{x}{x^2+3x-10} + \frac{5}{x^2+3x-10}$

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

$(x^2+3x-10)$

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

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

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

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

$x \neq 2, -5$

$\frac{1}{x-2}$

you try:  $\frac{5x-2}{x^2-16} - \frac{3x+6}{x^2-16}$

$$\frac{5x-2-3x-6}{x^2-16}$$

~~2x-8~~  
 $\frac{2x-8}{x^2-16}$

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

$$\boxed{\frac{2}{x+4}}$$

$x \neq \pm 4$