



Pick up the  
half-sheet  
warm up

HW →  
help

② Pick Up the  
Warm Up

1. Add the rational expressions.

$$\frac{2a}{a+3} + \frac{1}{a}$$

$$\frac{2a}{a+3} + \frac{1}{a} \Rightarrow \frac{+}{a(a+3)}$$

Goal: Condense to one fraction

$$(a) \frac{2a}{a(a+3)} + \frac{1(a+3)}{a(a+3)} \Rightarrow \frac{2a^2 + a + 3}{a(a+3)}$$

can't make 1's yet.

$$\frac{2a^2 + a + 3}{a(a+3)} \Rightarrow \frac{\cancel{(\quad)} \cancel{(\quad)}}{\cancel{a(a+3)}}$$

can't factor

$$\frac{2a^2 + a + 3}{a(a+3)}$$

↑  
answer

2.

Match each expression below with its equivalent expression on the right. Show your work.

$$\sqrt{9a^2b} = \sqrt{9 \cdot a^2 \cdot b}$$

$$3a\sqrt{b}$$

$$\sqrt{27ab^2}$$

$$\sqrt{27} \cdot \sqrt{a} \cdot \sqrt{b^2}$$

$$\sqrt{9} \sqrt{3} \sqrt{a} \sqrt{b^2}$$

$$3\sqrt{3} \cdot \sqrt{a} \cdot b = 3b\sqrt{3a}$$

$$3ab^2$$

$$3b\sqrt{3a}$$

$$9b\sqrt{3a}$$

$$3a\sqrt{3b}$$

$$3a\sqrt{b}$$

$$\sqrt{9a^2b} = \sqrt{9 \cdot a^2 \cdot b}$$

$$3a\sqrt{b}$$

$$\sqrt{27ab^2}$$

$$\sqrt{27} \cdot \sqrt{a} \cdot \sqrt{b^2}$$

$$\sqrt{9} \sqrt{3}$$

$$3 \cdot \sqrt{3} \cdot \sqrt{a} \cdot b$$

$$\sqrt{3a}$$

$$3ab^2$$

$$3b\sqrt{3a}$$

$$9b\sqrt{3a}$$

$$3a\sqrt{3b}$$

$$3a\sqrt{b}$$

Hw  
Questions  
?

yesterday's  
AIM → and today

Add / Subtract  
Rational Functions

# LEVEL 3

A.  $\frac{2}{x^2} - \frac{1}{x^2+x}$   $\rightarrow$   $\frac{2(x+1)}{x^2(x+1)} - \frac{(x)}{(x)(x+1)}$

•

$\frac{2x+2-x}{x^2(x+1)}$   $\rightarrow$   $\frac{x+2}{x^2(x+1)}$

B.

$$\frac{2x(x+5)}{(x-1)(x+5)} + \frac{3(x-1)}{(x+5)(x-1)} \rightarrow \frac{2x(x+5) + 3(x-1)}{(x-1)(x+5)}$$

$$\downarrow$$

$$\frac{2x^2 + 10x + 3x - 3}{(x-1)(x+5)}$$

$$\downarrow$$

$$\boxed{\frac{2x^2 + 13x - 3}{(x-1)(x+5)}}$$

C.

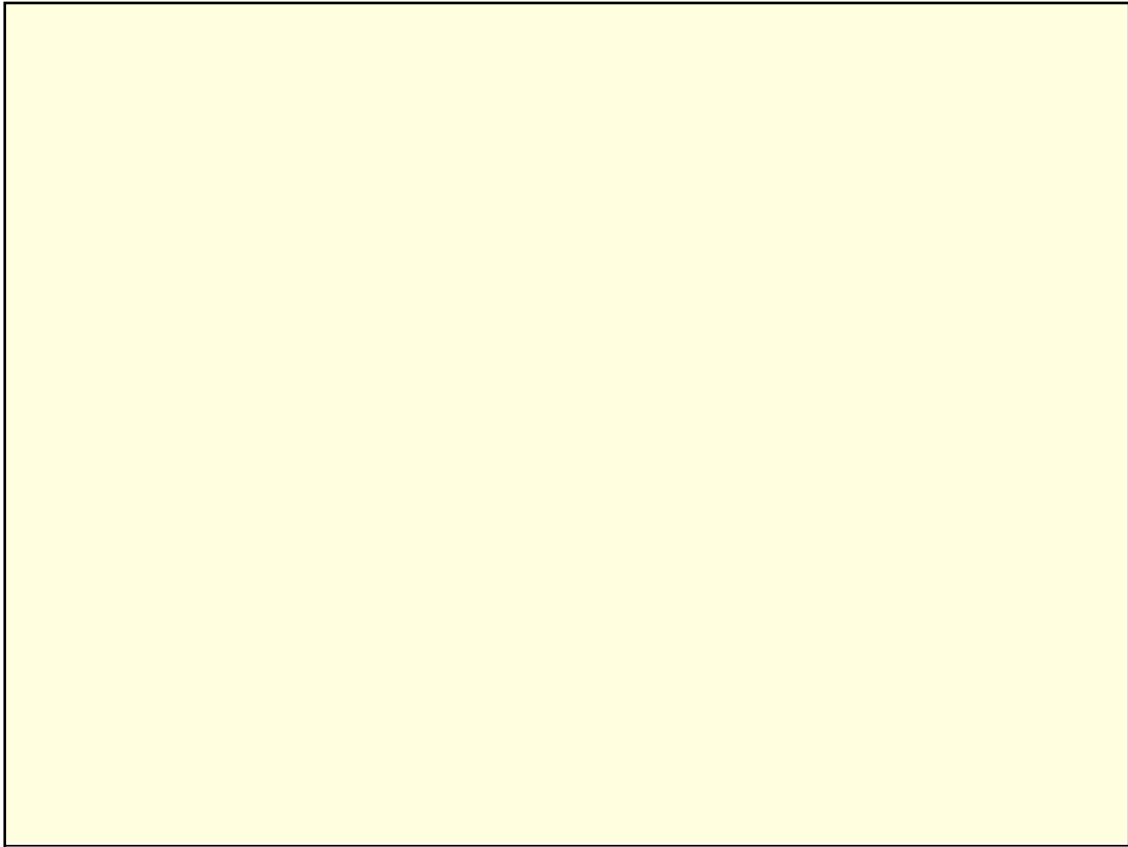
*Simple* →  $\frac{4x - x^2}{x^2 - 16} + \frac{2}{x+4}$

*Das* →

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

$$\downarrow$$

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



## Back & Forth

Partner A ↔ Partner B

- Alternate who writes
- Choose one person's notes to write.

$$\frac{2}{x+4} + \frac{4x-x^2}{x^2-16}$$

$$\frac{2}{x+4} + \frac{4x-x^2}{x^2-16}$$

↑ FACTOR

↓

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

↑ FACTOR

↓

$$\frac{2}{x+4} + \frac{x \overbrace{(-1)(x-4)}^{(4-x)}}{(x+4)\cancel{(x-4)}}$$



$$\frac{2}{x+4} + \frac{4x-x^2}{x^2-16}$$

↓ FACTOR

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

↓ FACTOR

$$\frac{2}{x+4} + \frac{x(-1)\cancel{(x-4)}}{(x+4)\cancel{(x-4)}}$$

↓

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

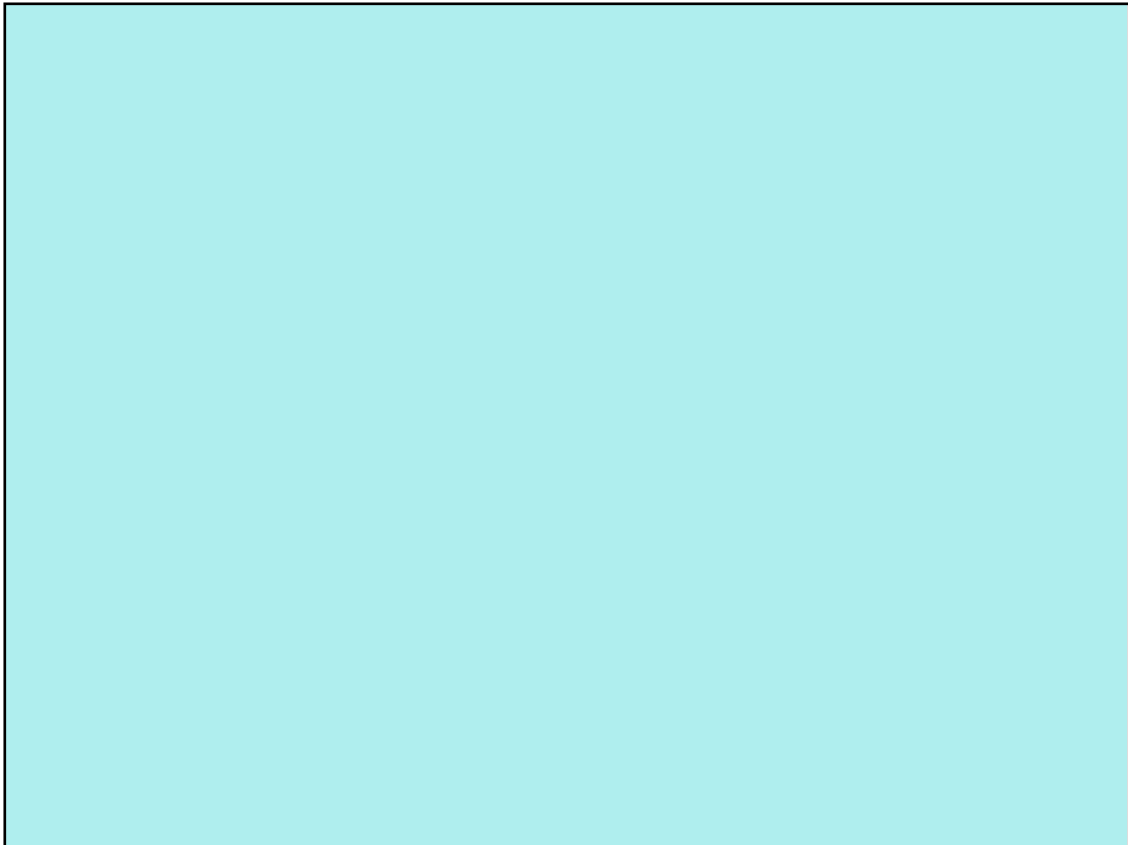
↓

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

↓

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

ANSWER



# HOT Potato

1 pencil

Group of 4

A Hot Potato Every team needs one paper and one pencil or one paper and a different color of pencil for each team member.

The first person writes down the first step, simplification, or answer *while explaining his or her thinking out loud*.

The next person corrects the first person's work, if necessary, and then puts the next step down, while explaining their thinking out loud.

The third team member corrects anything that is incorrect and then does their writing and explaining. And so on, until the problem is completed and checked.

Factor

$$\frac{9-3x}{(x+3)(x-3)} + \frac{2x}{x+3}$$

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

Answer :

$$\frac{2x-3}{x+3}$$

## Assignment

**3** .....103a, 104d, 106, 107ab, 108-109



*next  
example*

$$\frac{x}{3x+1} + \frac{2x^2-2}{(x-5)(3x+1)}$$

next  
example

$$\frac{x}{3x+1} + \frac{2x^2-2}{(x-5)(3x+1)}$$

← factor

↓

$$\frac{x}{3x+1} + \frac{2(x^2-1)}{(x-5)(3x+1)}$$

factor difference of two squares

↓

$$\frac{x}{3x+1} + \frac{2(x+1)(x-1)}{(x-5)(3x+1)}$$

↓

$$\frac{x}{3x+1} + \frac{2x^2-2}{(x-5)(3x+1)}$$

↓

$$\frac{x}{3x+1} + \frac{2(x^2-1)}{(x-5)(3x+1)}$$

factor difference of two squares

↓

$$\frac{x}{3x+1} + \frac{2(x+1)(x-1)}{(x-5)(3x+1)}$$

$$\frac{x(x-5)}{(3x+1)(x-5)} + \frac{2(x+1)(x-1)}{(x-5)(3x+1)}$$

$$\frac{\quad + \quad}{(x-5)(3x+1)}$$

← common denom.

↓

$$\frac{x(x-5) + 2(x+1)(x-1)}{(x-5)(3x+1)}$$

↓

$$\frac{x^2 - 5x + (2x+2)(x-1)}{(x-5)(3x+1)}$$

-----!

$$\frac{x^2 - 5x + (2x+2)(x-1)}{(x-5)(3x+1)}$$

→

$$\frac{x^2 - 5x + 2x^2 - 2x + 2x - 2}{(x-5)(3x+1)}$$

$$\frac{3x^2 - 5x - 2}{(x-5)(3x+1)}$$

$$\frac{(3x+1)(x-2)}{(x-5)(3x+1)}$$

$$\frac{x-2}{x-5}$$