

C11 - 6.4 - Adding Subtracting Rationals Notes

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

$$\frac{3 \times 1}{3 \times 2} + \frac{1 \times 2}{1 \times 2} =$$

$$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

$LCD = 6$

LCD
Do to top, do to bottom
Add/subtract

$$\frac{x}{2} + \frac{1}{2} = \frac{x+1}{2}$$

$LCD = 2$

$$\frac{x}{2} - \frac{1}{6} =$$

$$\frac{3 \times x}{3 \times 2} - \frac{1}{6} =$$

$$\frac{3x}{6} - \frac{1}{6} = \frac{3x-1}{6}$$

$LCD = 6$

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

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

$$\frac{3-x-2}{2} = \frac{1-x}{2}$$

$LCD = 2$

Don't forget to distribute the negative

Factoring out a negative

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

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

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

$$\frac{x}{x+2} + \frac{1}{x+2} = \frac{x+1}{x+2}$$

$LCD = x+2$ $x+2 \neq 0$
 $x \neq -2$

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

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

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

$$\frac{x+3+1}{(x+2)(x+3)} = \frac{x+4}{(x+2)(x+3)}$$

$LCD = (x+2)(x+3)$ $x+2 \neq 0$ $x+3 \neq 0$
 $x \neq -2$ $x \neq -3$

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

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

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

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

$LCD = x(x+2)$ $x \neq 0$ $x+2 \neq 0$
 $x \neq -2$ $x \neq -2$

$$\frac{x+2}{x^2+5x+6} + \frac{1}{x+3} =$$

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

Simplify 1st

$$\frac{1}{x+3} + \frac{1}{x+3} =$$

$$\frac{1+1}{x+3} = \frac{2}{x+3}$$

$LCD = (x+3)$ $x+2 \neq 0$ $x+3 \neq 0$
 $x \neq -2$ $x \neq -3$

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

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

$LCD = (x+2)(x-2)$ $x+2 \neq 0$ $x+3 \neq 0$
Simplify at end $x \neq -2$ $x \neq -3$