(18) $\dfrac{\frac{3}{x-4} - \frac{2}{4-x}}{\frac{2}{x-4} - \frac{2}{x}} = \dfrac{\frac{3}{x-4} + \frac{2}{x-4}}{\frac{2}{x-4} - \frac{2}{x}}$ LCD $= x(x-4)$

$\frac{3x+2x}{2x-2(x-4)} = \frac{5x}{2x-2x+8} = \frac{5x}{8}$

Section 6.5

Solving Rational Equations

$\frac{2}{3}x + \frac{3}{4} = \frac{1}{2}$ LCD $= 12$

$12 \cdot \frac{3}{3}x + 12 \cdot \frac{3}{4} = 6 \cdot \frac{1}{2}$

$8x + 9 = 6$

$-9 \quad -9$

$8x = -3$ $\Rightarrow$ $\boxed{x = \frac{-3}{8}}$ ✓

(16) $\dfrac{4x^2 - 24x}{3x^2 - x - 2} + \dfrac{3}{3x+2} = \dfrac{-4}{x-1}$ LCD $= (3x+2)(x-1)$

$(3x+2)(x-1)$

$4x^2 - 24x + 3(x-1) = -4(3x+2)$

$4x^2 - 24x + 3x - 3 = -12x - 8$

$4x^2 - 24x + 3x + 12x - 3 + 8 = 0$

$4x^2 - 9x + 5 = 0$

$(4x-5)(x-1) = 0$

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$4x - 5 = 0$

$4x = 5$

$x = \frac{5}{4}$ ✓

$x - 1 = 0$

$x = 1$ ✓

$LCD = (3x+2)(x-1)$

$3x + 2 = 0$

$3x = -2$

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

$x - 1 = 0$

$x = 1$

we need to throw out $x = 1$

$x \neq -\frac{2}{3}$ or 1

$\frac{0}{k}$	$\frac{k}{0}$ undefined
☺ is okay	☹

Example

$$\frac{4}{x-2} + \frac{6}{x^2-4} = \frac{2}{x+2}$$

$$\frac{6}{(x+2)(x-2)}$$

LCD: $(x+2)(x-2)$

$x \neq -2$ or 2

$4(x+2) + 6 = 2(x-2)$

$4x + 8 + 6 = 2x - 4$

$4x + 14 = 2x - 4$

$-2x \quad -2x$

$2x + 14 = -4$

$-14 \quad -14$

$2x = -18$

$x = -9$ ☺