Solving Rational Equations

$$\frac{7}{x-2} = \frac{11}{2x-10}$$

$7(2x-10) = 11(x-2)$

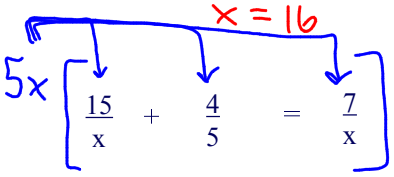
$14x - 70 = 11x - 22$

$3x = 48$

$x = 16$

Check:

$\frac{7}{14} \stackrel{?}{=} \frac{11}{22}$



$\frac{5x}{1} \cdot \frac{15}{x} = 75$

$\frac{5x}{1} \cdot \frac{4}{5} = 4x$

$\frac{5x}{1} \cdot \frac{7}{x} = 35$

$75 + 4x = 35$

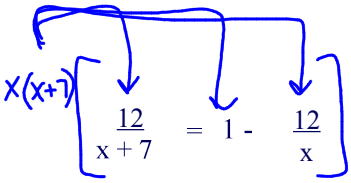
$4x = -40$

$x = -10$

Check:

$\frac{15}{-10} + \frac{4}{5} = \frac{7}{-10}$

$-1.5 + 0.8 = -0.7$ ✓



$\frac{x(x+7)}{1} \cdot \frac{12}{(x+7)} = 12x$

$\frac{x(x+7)}{1} \cdot \left(\frac{12}{x}\right) = 12(x+7)$

$12x = x(x+7) - 12(x+7)$

$12x = x^2 + 7x - 12x - 84$

$12x = x^2 - 5x - 84$

$-12x \quad -12x$

$0 = x^2 - 17x - 84$

$0 = (x-21)(x+4)$

$x - 21 = 0 \quad x + 4 = 0$

$x = 21 \quad x = -4$

84/1
42/2
21/4

$$\frac{12}{x+7} = 1 - \frac{12}{x}$$

Checks:

$\frac{12}{28} = 1 - \frac{12}{21}$

$\frac{3}{7} = 1 - \frac{4}{7}$ ✓

$\frac{12}{3} = 1 - \frac{12}{-4}$

$4 = 1 + 3$ ✓