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38. $\frac{2(x-2)}{x^2-10x+16} = \frac{2}{x+2}$

$(x-8)\left(\frac{2(x-2)}{(x-2)(x-8)}\right) = \left(\frac{2}{x+2}\right)(x-8)$

$(x+2)(2) = \left(\frac{2x-16}{x+2}\right)(x+2)$

$2x+4 = 2x-16$

$4 = -16 \Rightarrow$ There is NO SOLUTION.

48. $\frac{2x}{x-3} = \frac{3x}{x^2-9} + 2$

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

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

$2x^2+6x = 3x+2x^2-18$

$3x = -18$

$x = -6.$

50. $\frac{2}{x+1} + \frac{x}{x-1} = \frac{2}{x^2-1}$

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

$2x-2+x^2+x = 2$

$x^2+3x-4 = 0$

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

$x = 1$ OR $x = -4$

UH-OH

Check: $\frac{2}{2} + \frac{1}{0}$

$\frac{2}{-3} + \frac{-4}{-5} \stackrel{?}{=} \frac{2}{15}$

$\frac{-10+12}{15} = \frac{2}{15}$ ✓