

⑤  $\frac{2}{3x} + \frac{1}{6} = \frac{4}{3x}$  LCD = 6x

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

$\frac{4}{6x} + \frac{x}{6x} = \frac{4}{3x}$

$\frac{4+x}{6x} = \frac{4}{3x}$  Now cross multiply!

$(4+x)3x = 4(6x)$

$12x + 3x^2 = 24x$   
~~-24x~~ ~~-24x~~

$3x^2 - 12x = 0$

$3x(x-4) = 0$

~~$3x = 0$~~

$x-4=0$   
 $x=4$

⑥  $\frac{1}{x-2} + \frac{2}{1} = \frac{3x}{x+2}$  LCD:  $\frac{(x+2)(x-2)}{1}$

Multiply each term by the LCD to make fractions disappear!!

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

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

$x+2 + (x^2-4)(2) = 3x^2-6x$

$x+2 + 2x^2-8 = 3x^2-6x$

$0 = x^2-7x+6$

$0 = (x-6)(x-1)$   
 $x=6$   $x=1$

⑦  $\frac{x}{x+1} - \frac{x}{x-1} = \frac{x^2+1}{x^2-1}$  LCD:  $\frac{(x+1)(x-1)}{(x+1)(x-1)}$

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

$x(x-1) - x(x+1) = x^2+1$

~~$x^2 - x - x^2 - x = x^2+1$~~

$-2x = x^2+1$

$0 = x^2+2x+1$

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

extraneous  ~~$x=-1$~~  mult 2

No Solution