Example 6: Solve. $\frac{3x-2}{x-2} = \frac{6}{x^2-4} + 1$

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

$\cdot (x-2)(x+2)$

$(x+2)(3x-2) = 6 + 1(x-2)(x+2)$

$3x^2-2x+6x-4 = 6+1(x^2+2x-2x-4)$

$3x^2+4x-4 = 6+1(x^2-4)$

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

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

$-x^2 \quad -2 \quad -x^2 \quad -2$

$2x^2+4x-6 = 0$

$2(1x^2+2x-3) = 0$

$S\ 2 \mid P\ -3$

$3+-1 \mid 3\cdot -1$

$2(x+3)(x-1) = 0$

$x+3=0$ $\quad -3\ -3$ $\quad x=-3$

$x-1=0$ $\quad +1\ +1$ $\quad x=1$

Example 7: Solve.

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

If both sides of the equation are fractions, you can cross-multiply.

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

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

$-2x \quad +2 \qquad\qquad -2x \quad +2$

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

S: -3 | P: 2

$-2 + -1$ | $-2 \cdot -1$

$0 = (x-2)(x-1)$

$x - 2 = 0$

$+2 \quad +2$

$x = 2$

$x - 1 = 0$

$+1 \quad +1$

$x = 1$

Example 8: Solve. $\frac{3}{x^2+4x} = \frac{1}{x+4}$

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

$3x + 12 = x^2 + 4x$

$-3x \quad -12 \qquad -3x \quad -12$

$0 = 1x^2 + x - 12$

S. 1 | P. -12

4 + -3 | 4 · -3

$0 = (x+4)(x-3)$

$x+4=0$ $\quad x-3=0$

$-4 \quad -4 \qquad +3 \quad +3$

$x = -4$ $\quad x = 3$

Example 9: Solve using any method.

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

$$(3x+6)(x-2) = (x^2-4)(x+1)$$

$$3x^2-6x+6x-12 = x^3+x^2-4x-4$$

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

$$-3x^2 \quad +12 \qquad -3x^2 \qquad +12$$

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

$$4(-x+2)$$

$$x^2(x-2)-4(x-2)$$

$x-2=0$ $x-2=0$ $x+2=0$

$+2 \quad +2 \quad -2 \quad -2$

$x=2 \quad x=2 \quad x=-2$

NO SOLUTION

$$0 = (x-2)(x^2-4)$$

$$0 = (x-2)(x-2)(x+2)$$