

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

$(x-1)(x+1)$

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

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

$$3 - x^2 - 3x - 2 = x^2 - x$$

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

$$x = \frac{2 \pm \sqrt{(-2)^2 - 4 \cdot (-2) \cdot 1}}{2 \cdot (-2)} = \frac{2 \pm \sqrt{12}}{-4} =$$

$$= \frac{2 \pm 2\sqrt{3}}{-4} = \begin{cases} \frac{2+2\sqrt{3}}{-4} = \frac{-1-\sqrt{3}}{2} \quad \checkmark \\ \frac{2-2\sqrt{3}}{-4} = \frac{-1+\sqrt{3}}{2} \quad \checkmark \end{cases}$$