

$$\frac{12}{x+3} + \frac{4}{x-3} = 2$$

$$\frac{12}{x+3} + \frac{4}{x-3} - 2 = 0$$

$$-2 + \frac{12}{x+3} + \frac{4}{x-3} = 0$$

$$-2 + \frac{12(x-3) + 4(x+3)}{(x+3)(x-3)} = 0$$

$$-2 + \frac{(12x-36) + (4x+12)}{(x+3)(x-3)} = 0$$

$$-2 + \frac{12x-36+4x+12}{(x+3)(x-3)} = 0$$

$$-2 + \frac{16x-24}{(x+3)(x-3)} = 0$$

$$-\frac{2(x+3)(x-3)}{(x+3)(x-3)} + \frac{16x-24}{(x+3)(x-3)} = 0$$

$$\frac{-2(x+3)(x-3) + (16x-24)}{(x+3)(x-3)} = 0$$

$$\frac{-(2x+6)(x-3) + (16x-24)}{(x+3)(x-3)} = 0$$

$$\frac{-(2x^2 - 6x + 6x - 18) + (16x - 24)}{(x+3)(x-3)} = 0$$

$$\frac{-(2x^2 - 18) + (16x - 24)}{(x+3)(x-3)} = 0$$

$$\frac{-2x^2 + 18 + 16x - 24}{(x+3)(x-3)} = 0$$

$$\frac{-2x^2 - 6 + 16x}{(x+3)(x-3)} = 0$$

$$\frac{-2x^2+16x-6}{(x+3)(x-3)}=0$$

$$-\frac{2x^2-16x+6}{(x+3)(x-3)}=0$$

$$-\frac{2(x^2-8x+3)}{(x+3)(x-3)}=0$$

$$\frac{2(x^2-8x+3)}{(x+3)(x-3)}=0$$

Дробь обращается в нуль тогда, когда числитель равен нулю.

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

Находим дискриминант.

$$D=b^2-4ac=(-8)^2-4\cdot 1\cdot 3=52$$

$$x_{1,2}=\frac{-b\pm\sqrt{D}}{2a}$$

$$x_1=\frac{8-2\sqrt{13}}{2\cdot 1}=4-\sqrt{13}; x_2=\frac{8+2\sqrt{13}}{2\cdot 1}=4+\sqrt{13}$$

ответ: $x=4-\sqrt{13}; x=4+\sqrt{13}$.