

$$(x + 6)/(x - 6) * (\{x - 4\}/\{x + 4\})^2 + (x - 6)/(x + 6) * (\{x + 9\}/\{x - 9\})^2 = 2 * (x^2 + 36)/(x^2 - 36)$$

$$2 * (x^2 + 36)/(x^2 - 36) = (\alpha x + \beta)/(x - 6) + (Cx + D)/(x + 6) =$$

$$((\alpha x + \beta)(x + 6) + (Cx + D)(x - 6))/(x + 6)(x - 6) = (\alpha x^2 + 6\alpha x + \beta x + 6\beta + Cx^2 - 6Cx + Dx - 6D)/(x - 6)(x + 6) = (x^2(a + C) + x(6a + B - 6C + D) + 6(B - D))/(x - 6)(x + 6) = (2x^2 + 72)/(x^2 - 36)$$

$$a + C = 2$$

$$6a + B - 6C + D = 0$$

$$B - D = 12$$

$$a = 1 \quad c = 1$$

$$6 + B - 6 + D = 0$$

$$B - D = 12$$

$$B = -D$$

$$-2D = 12$$

$$D = -6$$

$$B = 6$$

$$2 * (x^2 + 36)/(x^2 - 36) = (x + 6)/(x - 6) + (x - 6)/(x + 6)$$

$$(x + 6)/(x - 6) * (\{x - 4\}/\{x + 4\})^2 + (x - 6)/(x + 6) * (\{x + 9\}/\{x - 9\})^2 = (x + 6)/(x - 6) + (x - 6)/(x + 6) \quad | * (x + 6)(x - 6)$$

$$(x + 6)^2 * (\{x - 4\}/\{x + 4\})^2 + (x - 6)^2 * (\{x + 9\}/\{x - 9\})^2 = (x + 6)^2 + (x - 6)^2$$

$$(x + 6)^2 * ((\{x - 4\}/\{x + 4\})^2 - 1) + (x - 6)^2 * ((\{x + 9\}/\{x - 9\})^2 - 1) = 0$$

$$(x + 6)^2 * ((x - 4)^2 - (x + 4)^2)/(x + 4)^2 + (x - 6)^2 * ((x + 9)^2 - (x - 9)^2)/(x - 9)^2 = 0$$

$$(x + 6)^2 * ((x - 4 - x - 4)(x - 4 + x + 4))/(x + 4)^2 + (x - 6)^2 * ((x + 9 - x + 9)(x + 9 + x - 9))/(x - 9)^2 = 0$$

$$(x + 6)^2 * (-8)(2x)/(x + 4)^2 + (x - 6)^2 * (18)(2x)/(x - 9)^2 = 0$$

$$2x((x + 6)^2 * (-8)/(x + 4)^2 + (x - 6)^2 * (18)/(x - 9)^2) = 0$$

$$2x = 0$$

$$x_1 = 0$$

$$(x + 6)^2 * (-8)/(x + 4)^2 + (x - 6)^2 * (18)/(x - 9)^2 = 0 \quad | * 2$$

$$(x + 6)^2 * (-16)/(x + 4)^2 + (x - 6)^2 * (36)/(x - 9)^2 = 0$$

$$(x - 6)^2 * (36)/(x - 9)^2 - (x + 6)^2 * (16)/(x + 4)^2 = 0$$

$$((x - 6)(6)/(x - 9) - (x + 6)(4)/(x + 4)) * ((x - 6)(6)/(x - 9) + (x + 6)(4)/(x + 4)) = 0$$

$$((x - 6)(6)/(x - 9) - (x + 6)(4)/(x + 4)) = 0$$

$$(6(x - 6)(x + 4) - 4(x + 6)(x - 9))/(x - 9)(x + 9) = 0$$

$$x \neq 9$$

$$x \neq -9$$

$$(6x^2 - 12x - 144 - 4x^2 + 12x + 216)/(x - 9)(x + 9) = 0$$

$$(2x^2 + 72)/(x - 9)(x + 9) = 0$$

$$2x^2 + 72 = 0$$

$$x^2 + 36 = 0$$

$$x^2 = -36$$

$$(6x^2 - 12x - 144 + 4x^2 - 12x - 216)/(x - 9)(x + 9) = 0$$

$$10x^2 - 24x - 360 = 0$$

$$5x^2 - 12x - 180 = 0$$

$$D = 36 + 900 = 936$$

$$x_1 = (6 - \sqrt{936})/5$$

$$x_2 = (6 + \sqrt{936})/5$$

$$\text{Ответ: } 0; (6 - \sqrt{936})/5; (6 + \sqrt{936})/5$$

