

Перемножалка

- 1)  $(x^2 - 3x)(x - 1)(x - 2) = 24$
- 2)  $(x^2 - 5x)(x + 3)(x - 8) + 108 = 0$
- 3)  $(x + 4)^2(x + 10)(x - 2) + 243 = 0$
- 4)  $x(x + 3)(x + 5)(x + 8) + 56 = 0$
- 5)  $(x - 3)(x - 4)(x - 5)(x - 6) = 1680$
- 6)  $(x - 2)(x - 3)^2(x - 4) = 20$
- 7)  $(x - 4)(x - 3)(x - 2)(x - 1) = 24$

$$1) (x^2 - 3x)(x - 1)(x - 2) = 24$$

$$(x^2 - 3x)(x^2 - 1x - 2x + 2) = 24$$

$$(x^2 - 3x)(x^2 - 3x + 2) = 24$$

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

$$t(t+2) = 24$$

$$t^2 + 2t - 24 = 0$$

$$t_1 * t_2 = -24$$

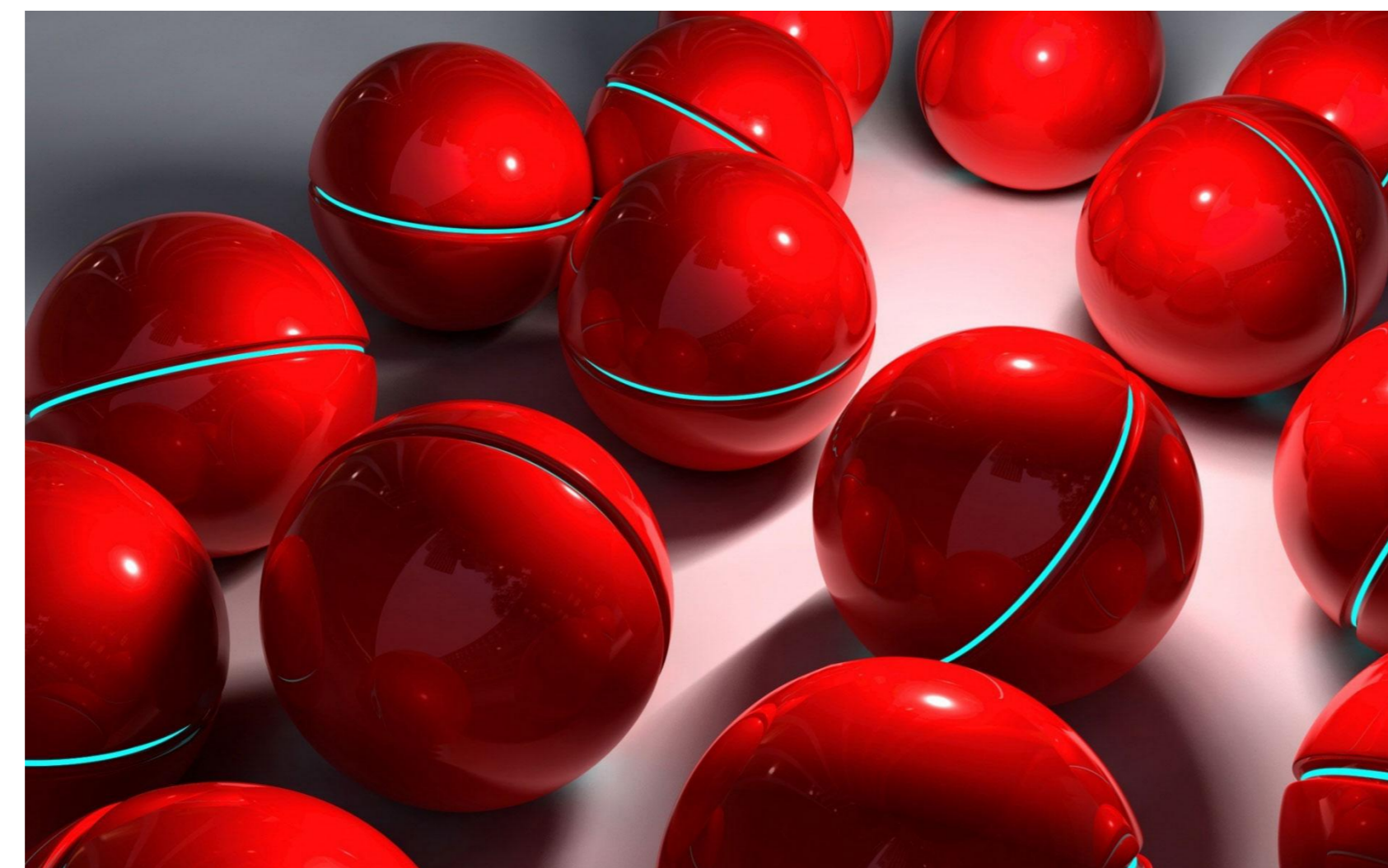
$$t_1 + t_2 = -2$$

$$-6 \quad 4$$

$$6) (x - 2)(x - 3)^2(x - 4) = 20$$

$$(x^2 - 3x - 2x + 6)(x^2 - 4x - 3x + 12) = 20$$

$$(x^2 - 5x + 6)(x^2 - 7x + 12) - 20 = 0$$



$$x^2 - 3x = -6 \text{ or } x^2 - 3x = 4$$

$$x^2 - 3x + 6 = 0$$

$$x_1 * x_2 = 6$$

$$x_2 + x_2 = 3$$

$$D = b^2 - 4ac = 9 - 24 = -15$$

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

$$x_1 x_2 = -4$$

$$x_1 + x_2 = 3$$

$$4 \quad -1$$

answer : 4, -1

$$7) (x - 4)(x - 3)(x - 2)(x - 1) = 24$$

$$(x^2 + 4 - x - 4x)(x^2 + 6 - 3x - 2x) = 24$$

$$(x^2 + 4 - 5x)(x^2 + 6 - 5x) = 24$$

$$t = (x^2 + 4 - 5x)$$

$$t(t+2) = 24$$

$$2) (x^2 - 5x)(x + 3)(x - 8) + 108 = 0$$

$$(x^2 - 5x)(x^2 + 3x - 8x - 24) + 108 = 0$$

$$(x^2 - 5x)(x^2 - 5x - 24) + 108 = 0$$

$$t = (x^2 - 5x)$$

$$t(t-24) + 108 = 0$$

$$t^2 - 24t + 108 = 0$$

$$t_1 t_2 = +108$$

$$t_1 + t_2 = +24$$

$$6 \quad 18$$

$$D^* = (144) - 108 = 36$$

$$t_1 = 12 - 6 = 6$$

$$t_2 = 12 + 6 = 18$$

$$x^2 - 5x = 6$$

$$x^2 - 5x - 6 = 0$$

$$x_1 x_2 = -6$$

$$x_1 + x_2 = 5$$

$$6 \quad -1$$

$$x^2 - 5x = 18$$

$$x^2 - 5x - 18 = 0$$

$$D = 25 - 4(18) = 25 - 72 = -47$$

$$x_1 x_2 = -18$$

$$x_1 + x_2 = -5$$

$$x_1 = (5 + \sqrt{47})/2$$

$$x_2 = (5 - \sqrt{47})/2$$

$$V1681 = 41$$

$$\begin{array}{r|l} -16 & \\ 81 & |81 \\ 1 & 81 \\ & 0 \end{array}$$

$$3) (x + 4)^2(x + 10)(x - 2) + 243 = 0$$

$$(x+4)^2(x^2+8x-20)+243=0$$

$$(x^2+8x+16)(x^2+8x-20)+243=0$$

$$t=(x^2+8x-20)$$

$$t(t+36)+243=0$$

$$t^2+36t+243=0$$

$$t_1 t_2 = 243$$

$$t_1 + t_2 = -36$$

$$D^* = 18^2 - 243 = 324 - 243 = 81$$

$$t_1 = -18 + 9 = -9$$

$$t_2 = -18 - 9 = -27$$

$$(x^2 + 8x - 20) = -9$$

$$x^2 + 8x - 20 + 9 = 0$$

$$x^2 + 8x - 11 = 0$$

$$x_1 x_2 = -11$$

$$x_1 + x_2 = -8$$

$$D^* = 16 + 44 = 60$$

$$x_1 = -4 + \sqrt{15}$$

$$x_2 = -4 - \sqrt{15}$$

$$(x^2 + 8x - 20) = -27$$

$$x^2 + 8x + 7 = 0$$

$$x_1 x_2 = 7$$

$$x_1 + x_2 = -8$$

$$-7; -1$$

$$\text{answer : } -7; -1; -4 + \sqrt{15}; -4 - \sqrt{15}$$

$$4) x(x + 3)(x + 5)(x + 8) + 56 = 0$$

$$(x^2 + 8x)(x^2 + 3x + 5x + 15) + 56 = 0$$

$$(x^2 + 8x)(x^2 + 8x + 15) + 56 = 0$$

$$t = (x^2 + 8x)$$

$$t(t+15) + 56 = 0$$

$$t^2 + 15t + 56 = 0$$

$$t_1 t_2 = 56$$

$$t_1 + t_2 = -15$$

$$-8 \quad -7$$

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

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

$$6) (x - 2)(x - 3)^2(x - 4) = 20$$

$$(x - 2)(x - 3)(x - 3)(x - 4) = 20$$

$$(x^2 - 2x - 4x + 8)(x^2 - 3x - 3x + 9) = 20$$

$$t = (x^2 - 6x + 8)$$

$$t(t+1) = 20$$

$$t^2 + t - 20 = 0$$

$$t_1 t_2 = -20$$

$$t_1 + t_2 = -1$$

$$t_1 t_2 = 4 - 5$$

$$(x^2 - 6x + 8) = 4$$

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

$$x_1 x_2 = 4$$

$$x_1 + x_2 = 6$$

$$D^* = 9 - 4 = 5$$

$$x_1 = 3 + \sqrt{5}$$

$$x_2 = 3 - \sqrt{5}$$

$$x_1 x_2 = 8$$

$$x_1 + x_2 = -8$$

$$D^* = 16 - 8 = 8$$

$$x_1 = -4 - 2\sqrt{2}$$

$$x_2 = -4 + 2\sqrt{2}$$

$$x^2 + 8x + 7 = 0$$

$$x_1 x_2 = 7$$

$$x_1 + x_2 = -8$$

$$-7; -1$$

Answer : -4 - 2v2 ; -4 + 2v2 ; -1 ; -7

$$(x^2 - 6x + 8) = -5$$

$$x^2 - 6x + 13 = 0$$

$$x^2 - 6x + 13 = 0$$

$$x_1 x_2 = 13$$

$$x_1 + x_2 = 6$$

$$D^* = 9 - 52 = -43$$

$$\text{no answer}$$

$$\text{answer : } 3 + \sqrt{5}; 3 - \sqrt{5}$$

$$5) (x - 3)(x - 4)(x - 5)(x - 6) = 1680$$

$$(x^2 - 3x - 6x + 18)(x^2 - 4x - 5x + 20) = 1680$$

$$(x^2 - 9x + 18)(x^2 - 9x + 20) - 1680 = 0$$

$$t = (x^2 - 9x + 18)$$

$$t(t+2) - 1680 = 0$$

$$t^2 + 2t - 1680 = 0$$

$$D^* = 1 + 1680 = 1681$$

$$-a = -1$$

$$c = -1680$$

$$t_1 = -1 - 41 = -42$$

$$t_2 = -1 + 41 = 40$$

$$(x^2 - 9x + 18) = -42$$

$$(x^2 - 9x + 18) + 42 = 0$$

$$x^2 - 9x + 60 = 0$$

$$D = 81 - 240 = -159$$

$$\text{no answer}$$

$$(x^2 - 9x + 18) = 40$$

$$(x^2 - 9x + 18) - 40 = 0$$

$$x^2 - 9x - 22 = 0$$

$$x_1 x_2 = -22$$

$$x_1 + x_2 = 9$$

$$11 \quad -2$$

$$\text{answer : } -2; 11$$