

Замена

$$1) (x^2 - 6x)^2 - 2(x - 3)^2 = 81$$

$$(x^2 - 6x + 9 - 9)^2 - 2(x - 3)^2 = 81$$

$$((x-3)^2 - 9)^2 - 2(x - 3)^2 = 81$$

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

$$(t-9)^2 - 2t = 81$$

$$t^2 - 18t + 81 - 2t = 81$$

$$t^2 - 20t + 81 = 81$$

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

$$t(t-20) = 0$$

$$t_1 = 0$$

$$t_2 = 20$$

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

$$x_1 = 3$$

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

$$(x-3)^2 - 20 = 0$$

$$(x-3-\sqrt{20})(x-3+\sqrt{20}) = 0$$

$$x-3-\sqrt{20} = 0$$

$$x = \sqrt{20} + 3$$

$$x-3+\sqrt{20} = 0$$

$$x = 3 - \sqrt{20}$$

Ответ: $3; \sqrt{20} + 3; 3 - \sqrt{20}$

$$2) (x^2 - 2x)^2 - 3x^2 + 6x - 4 = 0$$

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

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

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

$$D = 9 + 16 = 25$$

$$c_1 = (3-5)/2 = -1$$

$$c_2 = (3+5)/2 = 4$$

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

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

$$x = 1$$

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

$$D = 1 + 16 = 17$$

$$x_1 = (1 - \sqrt{17})/1$$

$$x_2 = (1 + \sqrt{17})/1$$

Ответ: $1; (1 - \sqrt{17})/1; (1 + \sqrt{17})/1$

$$3) (2x^2 + 3x - 1)^2 - 10x^2 - 15x + 9 = 0$$

$$4) (x^2 - 3x)^2 - 14x^2 + 42x + 40 = 0$$

$$(2x^2 + 3x - 1)^2 - 10x^2 - 15x + 9 = 0$$

$$(2x^2 + 3x - 1)^2 - 5(2x^2 + 3x) + 9 = 0$$

$$2x^2 + 3x = t$$

$$(t-1)^2 - 5t + 9 = 0$$

$$t^2 - 2t + 1 - 5t + 9 = 0$$

$$t^2 - 7t + 10 = 0$$

$$D = 49 - 40 = 9$$

$$t_1 = (7-3)/2 = 2$$

$$t_2 = (7+3)/2 = 5$$

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

$$D = 9 + 16 = 25$$

$$x_1 = (-3-5)/4 = -2$$

$$x_2 = (-3+5)/4 = 1/2$$

$$2x^2 + 3x - 5 = 0$$

$$D = 9 + 40 = 49$$

$$x_1 = (-3-7)/4 = -10/4 = -5/2$$

$$x_2 = (-3+7)/4 = 1$$

Ответ: $-2; 1/2; -5/2; 1$.

$$(x^2 - 3x)^2 - 14x^2 + 42x + 40 = 0$$

$$(x^2 - 3x)^2 - 14(x^2 - 3x) + 40 = 0$$

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

$$t^2 - 14t + 40 = 0$$

$$t_1 = 10$$

$$t_2 = 4$$

$$x^2 - 3x - 10 = 0$$

$$x_1 = -2$$

$$x_2 = 5$$

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

$$x_3 = 4$$

$$x_4 = -1$$

Ответ: $-2; 5; 4; -1$

