

Биквадратные уравнения

$$1) 25x^4 + 66x^2 - 27 = 0$$

$$x^2 = t$$

$$25t^2 + 66t - 27 = 0$$

$$D = 33^2 + 25 \cdot 27 = 3^2 \cdot 11^2 +$$

$$25 \cdot 3^2 \cdot 3 = 3^2(11^2 + 75) = 9(196)$$

$$\sqrt{D} = 3 \cdot 14 = 42$$

$$t_1 = (-33 + 42) / 25 = 9 / 25$$

$$t_2 = (-33 - 42) / 25 = -75 / 25 = -3$$

$$x^2 = 9 / 25 \quad x = \pm \frac{3}{5}$$

$$x^2 = -3 \quad \text{решений нет}$$

$$2) x^6 + 9x^3 + 8 = 0$$

$$x^3 = t$$

$$t^2 + 9t + 8 = 0$$

$$D = \sqrt{81 - 32} = \sqrt{49} = 7$$

$$t_1 = (-9 + 7) / 2 = -1$$

$$t_2 = -8$$

$$x^3 = -1 \quad x = -1$$

$$x^3 = -8 \quad x = -2$$