

**Szakköri feladatok**  
*Irracionális egyenletek*

Oldjuk meg a valós számok halmazán a következő egyenleteket!

$$1, \sqrt{x+6} - \sqrt{x-7} = 5$$

$$2, \sqrt{10+x+6\sqrt{x+1}} + \sqrt{5-x+2\sqrt{4-x}} = 7$$

$$3, \sqrt{x-2+\sqrt{2x-5}} + \sqrt{x+2+3\sqrt{2x-5}} = 7\sqrt{2}$$

$$4, \sqrt{x^2+17x+4} - \sqrt{x^2+11x+7} = \frac{2x-1}{5}$$

$$5, \frac{1}{1-\sqrt{1-x}} - \frac{1}{1+\sqrt{1-x}} = \frac{\sqrt{3}}{x}$$

$$6, 6\sqrt[3]{x-3} + \sqrt[3]{x-2} = 5\sqrt[3]{(x-3)(x-2)}$$

$$7, \sqrt[3]{x+45} - \sqrt[3]{x-16} = 1$$

$$8, \sqrt[3]{24+x} + \sqrt{12-x} = 6$$

$$9, (x-1)\sqrt[3]{\frac{x-1}{3-x}} + (3-x)\sqrt[3]{\frac{3-x}{x-1}} = 2$$

$$10, x+7 - 19\sqrt{\frac{x+7}{x-17}} - \frac{560}{x-17} = 0$$

$$12, \sqrt{x+17} + \sqrt{x-12} = 17-x$$

$$13, x^2 - 24x + 142 = \sqrt{x-10} + \sqrt{14-x}$$

$$14, x\sqrt{1-x} + \sqrt{3+x} = 2\sqrt{x^2+1}$$

$$15, x^6 - x^3 - 2x^2 - 1 = 2(x - x^3 + 1)\sqrt{x}$$