

Sectiunea 10. Functia putere. Functia Radical.

Exersare:

Parte I:

1. Calculati $\sqrt[3]{-64} + 27^{\frac{2}{3}} + [\sqrt[3]{4}]$.
2. Rezolvati in \mathbb{R} ecuatia $\sqrt{x+3} = x-3$.
3. Rezolvati in \mathbb{R} ecuatia $\sqrt{x^2-x-2+1} = \sqrt{x-2}$.

Parte II

1. Sa consideram numarul real $\alpha = 7 + 5\sqrt{2}$.
 - (a) Aratati ca $\sqrt[3]{\alpha} = 1 + \sqrt{2}$.
 - (b) Rezolvati in \mathbb{R} ecuatia $(1 - \sqrt{2})^x = 7 + 5\sqrt{2}$.
2. Fie $E(k) = [\sqrt{k}]$, $k \in \mathbb{N}$.
 - (a) Sa se calculeze $E(4)$, $E(5)$ si $E(9)$.
 - (b) Sa se calculeze $\sum_{k=1}^{10} E(k)$.
3. Fie $f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = \sqrt[3]{x-1}$.
 - (a) Sa se arate ordoneze $f(\sqrt{5})$, $f(\sqrt[3]{9})$ si $f\left(\frac{\pi}{2}\right)$.
 - (b) Sa se rezolve in \mathbb{R} ecuatia $f(x) = 1 - x$.

Aprofundare:

Parte I:

1. Rezolvati in \mathbb{R} ecuatia $(x + 2)^3 = (2 - x)^3$.
2. Rezolvati in \mathbb{R} ecuatia $\sqrt{x^2 - 1} = x + 1$.
3. Rezolvati in \mathbb{R} ecuatia $\sqrt{x + 1} = 1 - \sqrt{x}$.

Parte II

1. Fie $E(x) = \sqrt{x - 2\sqrt{x - 1}}$, pentru $x > 1$.
 - (a) Aratati ca $E(x) = |\sqrt{x - 1} - 1|$, pentru orice $x > 1$.
 - (b) Rezolvati ecuatia $E(x) = 1$.
2. Fie $E(k) = \lfloor \sqrt[3]{k} \rfloor, k \in \mathbb{N}$.
 - (a) Sa se calculeze $E(8), E(9)$ si $E(27)$.
 - (b) Sa se calculeze $\sum_{k=1}^{100} E(k)$.
3. Fie $E(x) = \sqrt[3]{x - 1}$ si $F(x) = \sqrt{x}, \forall x \in (0, \infty)$.
 - (a) Sa se arate ca $E(x)^3 - F(x)^2$ nu depinde de x .
 - (b) Sa se rezolve ecuatia $\sqrt[3]{x - 1} + \sqrt{x} + 1 = 0$.