

Ενότητα 7: Ριζικά - Δυνάμεις

Δυνάμεις

$$\alpha^n = \alpha \cdot \alpha \cdot \alpha \cdot \dots \text{ (n φορές)}$$

$$\alpha^0 = 1 \text{ (}\alpha \neq 0\text{)}$$

$$\alpha^{-n} = 1/\alpha^n$$

Ιδιότητες Δυνάμεων

$$\alpha^m \cdot \alpha^n = \alpha^{m+n}$$

$$\alpha^m / \alpha^n = \alpha^{m-n}$$

$$(\alpha^m)^n = \alpha^{m \cdot n}$$

$$(\alpha \cdot \beta)^n = \alpha^n \cdot \beta^n$$

Ριζικά

$$n\sqrt{\alpha} = \beta \text{ αν } \beta^n = \alpha$$

- Άρτια ρίζα ($n=2,4,\dots$): $\alpha \geq 0$
- Περιττή ρίζα ($n=3,5,\dots$): $\alpha \in \mathbb{R}$

Ιδιότητες Ριζικών

- $\sqrt{\alpha} \cdot \sqrt{\beta} = \sqrt{\alpha \cdot \beta}$
- $\sqrt{\alpha} / \sqrt{\beta} = \sqrt{\alpha/\beta}$
- $m\sqrt{(n\sqrt{\alpha})} = m \cdot n\sqrt{\alpha}$

Ρητοί Εκθέτες

$$\alpha^{m/n} = n\sqrt{\alpha^m}$$

$$8^{(1/3)} = \sqrt[3]{8} = 2$$

$$27^{(2/3)} = (\sqrt[3]{27})^2 = 9$$

Ασκήσεις

1. $2^3 \cdot 2^4 = 2^7 = 128$

2. $\sqrt{72} = \sqrt{36 \cdot 2} = 6\sqrt{2}$

3. $16^{(3/4)} = (\sqrt[4]{16})^3 = 2^3 = 8$