

## Sume de puteri - probleme rezolvate -

1) Calculati suma:  $S = 1 + 3 + 3^2 + 3^3 + \dots + 3^{99} = ?$

**Rezolvare** Inmultesc suma cu baza 3 si apoi calculez diferenta  $3 \cdot S - S$ .

$$3 \cdot S = \cancel{3} + \cancel{3^2} + \cancel{3^3} + \dots + \cancel{3^{99}} + 3^{100}$$

$$S = \textcircled{1} + \cancel{3} + \cancel{3^2} + \cancel{3^3} + \dots + \cancel{3^{99}}$$

---


$$3 \cdot S - S = 3^{100} - 1$$

$$2 \cdot S = 3^{100} - 1$$

$$S = (3^{100} - 1) : 2 \quad \text{sau} \quad S = \frac{3^{100} - 1}{3 - 1}$$

2) Calculati suma:  $S = 1 + 7 + 7^2 + 7^3 + \dots + 7^{99} = ?$

**Rezolvare** Inmultesc suma cu baza 7 si apoi calculez diferenta  $7 \cdot S - S$ .

$$7 \cdot S = \cancel{7} + \cancel{7^2} + \cancel{7^3} + \dots + \cancel{7^{99}} + 7^{100}$$

$$S = \textcircled{1} + \cancel{7} + \cancel{7^2} + \cancel{7^3} + \dots + \cancel{7^{99}}$$

---


$$7 \cdot S - S = 7^{100} - 1$$

$$6 \cdot S = 7^{100} - 1$$

$$S = (7^{100} - 1) : 6 \quad \text{sau} \quad S = \frac{7^{100} - 1}{7 - 1}$$

3) Calculati suma:  $S = 1 + 5 + 5^2 + 5^3 + \dots + 5^{50} = ?$

**Rezolvare** Inmultesc suma cu baza 5 si apoi calculez diferenta  $5 \cdot S - S$ .

$$5 \cdot S = \cancel{5} + \cancel{5^2} + \cancel{5^3} + \dots + \cancel{5^{99}} + 5^{51}$$

$$S = \textcircled{1} + \cancel{5} + \cancel{5^2} + \cancel{5^3} + \dots + \cancel{5^{50}}$$

---


$$5 \cdot S - S = 5^{51} - 1$$

$$4 \cdot S = 5^{51} - 1$$

$$S = (5^{51} - 1) : 4 \quad \text{sau} \quad S = \frac{5^{51} - 1}{5 - 1}$$

Sursa bibliografică: <http://www.didactic.ro/materiale-didactice/sume-de-puteri-probleme-rezolvate>  
<http://www.didactic.ro/pagina-mea/silviadoandes>