

Domaći rad - geometrijski niz - Sara Milošević

1205.

$$\text{a) } 2 + 5 + 11 + \dots + (3 \cdot 2^{n-1} - 1)$$

$$S_n = 3 \cdot 2^0 - 1 + 3 \cdot 2^1 - 1 + 3 \cdot 2^2 - 1 + \dots + 3 \cdot 2^{n-1} - 1$$

$$S_n = 3 \cdot \underbrace{(2^0 + 2^1 + 2^2 + \dots + 2^{n-1})}_{a_1=1 \quad q=2} + n \cdot (-1)$$

$$S_n = 3 \cdot \frac{q^n - 1}{q - 1} - n = 3 \cdot \frac{2^n - 1}{1} - n = 3 \cdot (2^n - 1) - n$$

$$\mathbf{S_n = 3 \cdot (2^n - 1) - n}$$

1199.

$$\text{b) } S_n = 1 - \frac{1}{3} + \frac{1}{3^2} - \dots + \frac{(-1)^{n-1}}{3^{n-1}}$$

$$a_1 = 1, \quad a_2 = a_1 \cdot q, \quad -\frac{1}{3} = 1 \cdot q$$

$$q = -\frac{1}{3}$$

$$S_n = 1 \cdot \frac{1 - \left(-\frac{1}{3}\right)^n}{1 + \frac{1}{3}}$$

$$S_n = \frac{1 - \left(-\frac{1}{3}\right)^n}{\frac{4}{3}} = \frac{3}{4} \cdot \left(1 - \left(-\frac{1}{3}\right)^n\right)$$

$$\mathbf{S_n = \frac{3}{4} \cdot \left(1 - \left(-\frac{1}{3}\right)^n\right)}$$