Домаћи рад Матија Копривица 3-3

1200. b)

$$S_n = \underbrace{1 - \frac{1}{3} + \frac{1}{3^2} - \cdots + \frac{(-1)^{n-1}}{3^{n-1}}}_{n\text{-sabiraka}}$$

$$a_1 = 1\,, \qquad q = -\frac{1}{3}$$

$$S_n = a_1 \frac{1 - q^n}{1 - q} = 1 \cdot \frac{1 - \left(-\frac{1}{3}\right)^n}{1 - \left(-\frac{1}{3}\right)} = \frac{1 - \left(-\frac{1}{3}\right)^n}{\frac{4}{3}}$$

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

1206.a)

$$2 + 5 + 11 + \cdots + (3 \cdot 2^{n-1} - 1) = S_n$$

$$S_n = 2 + 5 + 11 + 23 + 47 + \cdots + (3 \cdot 2^{n-1} - 1)$$

$$S_n = (3 - 1) + (6 - 1) + (12 - 1) + (24 - 1) + (48 - 1) + \cdots + (3 \cdot 2^{n-1} - 1)$$

$$S_n = \underbrace{(-1 - 1 - 1 - \cdots - 1)}_{\text{n-jedinica}} + (3 + 6 + 12 + 24 + 48 + \cdots + 3 \cdot 2^{n-1})$$

$$a_1 = 3 \quad q = 2$$

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

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