

Rješenja zadatka 2.1

Zadatak 1. Napiši prvih pet članova niza (a_n) kojem je opći član a_n zadan formulom:

$$1) a_n = 2n - 3;$$

$$2) a_n = \frac{n-1}{n+1};$$

$$3) a_n = -3 + (-1)^n;$$

$$4) a_n = \left(1 + \frac{1}{n}\right)^n;$$

$$5) a_n = \frac{1}{n!};$$

$$6) a_n = 1 + (-1)^n;$$

$$7) a_n = n(n+1);$$

$$8) a_n = \frac{(-1)^n + (-1)^{n-1}}{2}.$$

Rješenje.

$$1) a_n = 2n - 3;$$

$$a_1 = 2 \cdot 1 - 3 = -1, \quad a_2 = 2 \cdot 2 - 3 = 1, \quad a_3 = 2 \cdot 3 - 3 = 3, \\ a_4 = 2 \cdot 4 - 3 = 5, \quad a_5 = 2 \cdot 5 - 3 = 7;$$

$$2) a_n = \frac{n-1}{n+1};$$

$$a_1 = \frac{1-1}{1+1} = 0, \quad a_2 = \frac{2-1}{2+1} = \frac{1}{3}, \quad a_3 = \frac{3-1}{3+1} = \frac{2}{4} = \frac{1}{2}, \\ a_4 = \frac{4-1}{4+1} = \frac{3}{5}, \quad a_5 = \frac{5-1}{5+1} = \frac{4}{6} = \frac{2}{3};$$

$$3) a_n = -3 + (-1)^n;$$

$$a_1 = -3 + (-1)^1 = -4, \quad a_2 = -3 + (-1)^2 = -2, \\ a_3 = -3 + (-1)^3 = -4, \quad a_4 = -3 + (-1)^4 = -2, \\ a_5 = -3 + (-1)^5 = -4;$$

$$4) a_n = \left(1 + \frac{1}{n}\right)^n;$$

$$a_1 = \left(1 + \frac{1}{1}\right)^1 = 2, \quad a_2 = \left(1 + \frac{1}{2}\right)^2 = \left(\frac{3}{2}\right)^2 = \frac{9}{4}, \\ a_3 = \left(1 + \frac{1}{3}\right)^3 = \left(\frac{4}{3}\right)^3 = \frac{64}{27}, \quad a_4 = \left(1 + \frac{1}{4}\right)^4 = \left(\frac{5}{4}\right)^4 = \frac{625}{256}, \\ a_5 = \left(1 + \frac{1}{5}\right)^5 = \left(\frac{6}{5}\right)^5 = \frac{7776}{3125};$$

$$5) a_n = \frac{1}{n!};$$

$$a_1 = 1, \quad a_2 = \frac{1}{2}, \quad a_3 = \frac{1}{6}, \quad a_4 = \frac{1}{24}, \quad a_5 = \frac{1}{120};$$

$$6) a_n = 1 + (-1)^n;$$

$$a_1 = 0, \quad a_2 = 2, \quad a_3 = 0, \quad a_4 = 2, \quad a_5 = 0;$$

$$7) a_n = n(n + 1);$$

$$a_1 = 1(1 + 1) = 2, \quad a_2 = 2(2 + 1) = 6, \quad a_3 = 3(3 + 1) = 12,$$

$$a_4 = 4(4 + 1) = 20, \quad a_5 = 5(5 + 1) = 30;$$

$$8) a_n = \frac{(-1)^n + (-1)^{n-1}}{2}.$$

$$a_1 = a_2 = a_3 = a_4 = a_5 = \dots = a_n = 0$$