

Izračunajte sljedeće nepravne integrale:

$$1. \quad I_1 = \int_{-\infty}^0 \frac{10 \cdot dx}{25 \cdot x^2 + 1}.$$

$$2. \quad I = \int_{-\infty}^{-3} \frac{2}{(\ln 3) \cdot (t^2 + 2 \cdot t)} \cdot dt$$

$$3. \quad I = \int_2^{+\infty} \frac{1}{(\ln 2) \cdot (y^2 - y)} \cdot dy.$$

$$4. \quad I = \int_2^{+\infty} \frac{3}{(2 \cdot \ln 2) \cdot (w^2 + w - 2)} \cdot dw.$$

Primjenom D'Alembertova kriterija ispitajte konvergenciju sljedećih redova:

$$5. \quad \sum_{n=1}^{+\infty} \frac{n-1}{2^n}.$$

$$6. \quad \sum \frac{n^2 + n}{3^n}.$$

$$7. \quad \sum_{n=1}^{+\infty} \frac{n^2 - n}{5^n}.$$

Primjenom Cauchyjeva kriterija ispitajte konvergenciju sljedećih redova:

$$8. \quad \sum \frac{n \cdot 3^{2n}}{2^{3n}}.$$

$$9. \quad \sum \frac{n^2 \cdot 2016^n}{13^{3n}}.$$

$$10. \quad \sum \left[\frac{3 \cdot n^2 + 2 \cdot n + 1}{(2 \cdot n - 1) \cdot (2 \cdot n + 1)} \right]^n$$

Riješite sljedeće linearne homogene rekurzije s konstantnim koeficijentima uz zadane početne uvjete:

$$11. \quad a_n = 2 \cdot a_{n-1} + 8 \cdot a_{n-2}, \quad a_1 = 2, \quad a_2 = 20.$$

$$12. \quad a_n = 5 \cdot a_{n-1} + 6 \cdot a_{n-2}, \quad a_1 = 6, \quad a_2 = 36.$$

REZULTATI ZADATAKA

1. π .
2. 1.
3. 1.
4. 1.
5. Konvergira $\left(r = \frac{1}{2}\right)$.
6. Konvergira $\left(r = \frac{1}{3}\right)$.
7. Konvergira $\left(r = \frac{1}{5}\right)$.
8. Divergira $\left(r = \frac{9}{8}\right)$.
9. Konvergira $\left(r = \frac{2016}{2197}\right)$.
10. Konvergira $\left(r = \frac{3}{4}\right)$.
11. $a_n = (-2)^n + 4^n$.
12. $a_n = 6^n$.