Przedostatnią całkę obliczamy według zadania 15.8:

$$\int \frac{2x\,dx}{(x^2+1)^2} = \frac{-1}{x^2+1}.$$

Ostatnią całkę obliczamy według zadania 16.22:

$$\int \frac{dx}{(x^2+1)^2} = \tfrac{1}{2}\cdot\frac{x}{x^2+1} + \tfrac{1}{2}\operatorname{arctg} x.$$

Ostatecznie więc po przekształceniu otrzymujemy

$$I = \ln\left|\frac{x-1}{x}\right| + \frac{1}{(x-1)^2} + \tfrac{1}{2}\cdot\frac{x+2}{x^2+1} + \tfrac{1}{2}\operatorname{arctg} x + C.$$

**Zadania**

Obliczyć całki (zad. 16.26 - 16.98):

**16.26.** $\int (2x+1)^3\,dx$.

**16.27.** $\int \frac{dx}{(3x-2)^4}$.

**16.28.** $\int \frac{3x-4}{x^2-x-6}\,dx$.

**16.29.** $\int \frac{2x-3}{x^2-3x+3}\,dx$.

**16.30.** $\int \frac{x+13}{x^2-4x-5}\,dx$.

**16.31.** $\int \frac{2x+6}{2x^2+3x+1}\,dx$.

**16.32.** $\int \frac{6x-13}{x^2-\frac{7}{2}x+\frac{3}{2}}\,dx$.

**16.33.** $\int \frac{4x-5}{2x^2-5x+3}\,dx$.

**16.34.** $\int \frac{5x+11}{x^2+3x-10}\,dx$.

**16.35.** $\int \frac{\frac{5}{6}x-16}{x^2+3x-18}\,dx$.

**16.36.** $\int \frac{dx}{x^2+2x-1}$.

**16.37.** $\int \frac{dx}{6x^2-13x+6}$.

**16.38.** $\int \frac{5+x}{10x+x^2}\,dx$.

**16.39.** $\int \frac{7x}{4+5x^2}\,dx$.

**16.40.** $\int \frac{dx}{-5+6x-x^2}$.

**16.41.** $\int \frac{dx}{1+x-x^2}$.

**16.42.** $\int \frac{dx}{2x-3x^2}$.

**16.43.** $\int \frac{3x+2}{x^2-x-2}\,dx$.

**16.44.** $\int \frac{2x-1}{x^2-6x+9}\,dx$.

**16.45.** $\int \frac{x-1}{4x^2-4x+1}\,dx$.

**16.46.** $\int \frac{2x-13}{(x-5)^2}\,dx$.

**16.47.** $\int \frac{3x+1}{(x+2)^2}\,dx$.

**16.48.** $\int \frac{dx}{2x^2-2x+5}$.

**16.49.** $\int \frac{dx}{3x^2+2x+1}$.

**16.50.** $\int \frac{dx}{13-6x+x^2}$.

**16.51.** $\int \frac{3dx}{9x^2-6x+2}$.

**16.52.** $\int \frac{x+1}{x^2-x+1}\,dx$.

**16.53.** $\int \frac{4x-1}{2x^2-2x+1}\,dx$.

**16.54.** $\int \frac{2x-1}{x^2-2x+5}\,dx$.

**16.55.** $\int \frac{2x-10}{x^2-2x+10}\,dx$.

**16.56.** $\int \frac{2x-20}{x^2-8x+25}\,dx$.

**16.57.** $\int \frac{3x+4}{x^2+4x+8}\,dx$.

**16.58.** $\int \frac{x+6}{x^2-3}\,dx$.

**16.59.** $\int \frac{x+6}{x^2+3}\,dx$.

**16.60.** $\int \frac{6x}{x^2+4x+13}\,dx$.

**16.61.** $\int \frac{10x-44}{x^2-4x+20}\,dx$.

**16.62.** $\int \frac{4x-5}{x^2-6x+10}\,dx$.

**16.63.** $\int \frac{5x}{2+3x}\,dx$.

**16.64.** $\int \frac{x^2}{5x^2+12}\,dx$.

**16.65.** $\int \frac{2x^2+7x+20}{x^2+6x+25}\,dx$.

**16.66.** $\int \frac{7x^2+7x-176}{x^3-9x^2+6x+56}\,dx$.

**16.67.** $\int \frac{x^3-4x^2+1}{(x-2)^4}\,dx$.

**16.68.** $\int \frac{3x^2-5x+2}{x^3-2x^2+3x-6}\,dx$.

**16.69.** $\int \frac{2x+1}{(x^2+1)^2}\,dx$.

**16.70.** $\int \frac{x^3+2x-6}{x^2-x-2}\,dx$.

**16.71.** $\int \frac{2x^3-19x^2+58x-42}{x^2-8x+16}\,dx$.

**16.72.** $\int \frac{x^4}{x^2+1}\,dx$.

**16.73.** $\int \frac{72x^6}{3x^2+2}\,dx$.

**16.74.** $\int \frac{2x^4-10x^3+21x^2-20x+5}{x^2-3x+2}\,dx$.

**16.75.** $\int \frac{x^2+5x+41}{(x+3)(x-1)(x-\frac{1}{2})}\,dx$.

**16.76.** $\int \frac{17x^2-x-26}{(x^2-1)(x^2-4)}\,dx$

**16.77.** $\int \frac{2x}{(x^2+1)(x^2+3)}\,dx$.

**16.78.** $\int \frac{10x^3+110x+400}{(x^2-4x+29)(x^2-2x+5)}\,dx$.

**16.79.** $\int \frac{4x^3-2x^2+6x-13}{x^4+3x^2-4}\,dx$.

**16.80.** $\int \frac{10x^3+40x^2+40x+6}{x^4+6x^3+11x^2+6x}\,dx$.

**16.81.** $\int \frac{6x^3+4x+1}{x^4+x^2}\,dx$.

**16.82.** $\int \frac{dx}{x^3-a^2x}$.

**16.83.** $\int \frac{dx}{x^3+x^2+x}$.

**16.84.** $\int \frac{dx}{x^4+x^2+1}$.

**16.85.** $\int \frac{5x^3+3x^2+12x-12}{x^4-16}\,dx$.

**16.86.** $\int \frac{15x^2+66x+21}{(x-1)(x^2+4x+29)}\,dx$.

**16.87.** $\int \frac{4x^3+9x^2+4x+1}{x^4+3x^3+3x^2+x}\,dx$.

**16.88.** $\int \frac{dx}{x^3(x-1)^2(x+1)}$.

**16.89.** $\int \frac{dx}{(x^2+x+1)^2}$.

**16.90.** $\int \frac{3x^2-17x+21}{(x-2)^3}\,dx$.

**16.91.** $\int \frac{dx}{(x^2+4x+8)^3}$.

**16.92.** $\int \frac{x^3-2x^2+7x+4}{(x-1)^2(x+1)^2}\,dx$.

**16.93.** $\int \frac{dx}{x^4+64}$.

**16.94.** $\int \frac{5x^3-11x^2+5x+4}{(x-1)^4}\,dx$.

**16.95.** $\int \frac{dx}{x^4+6x^2+25}$.

**16.96.** $\int \frac{9x^4-3x^3-23x^2+30x-1}{(x-1)^4(x+3)}\,dx$

**16.97.** $\int \frac{x^3-2x^2+5x-8}{x^4+8x^2+16}\,dx$.

**16.98.** $\int \frac{3x^2+x-2}{(x-1)^3(x^2+1)}\,dx$.