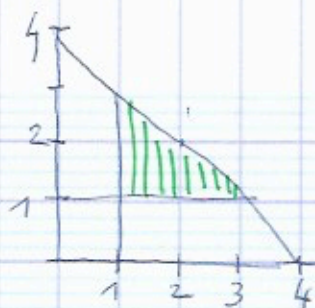


$$\textcircled{7} \iint \ln(1+x+iy) \, dx \, dy$$



$$I = \int_{x=1}^3 \int_{y=1}^{4-x} \ln(1+x+iy) \, dy \, dx$$

$$= \int_{x=1}^3 \left[(1+x+iy) \ln(1+x+iy) - 1+iy \right]_{y=1}^{4-x} dx$$

repeł
 $\int \ln x = x \ln x - x$

done

$$\int \ln(k+x) = (k+x) \ln(k+x) - k - x$$

$$= \int_{x=1}^3 \left[(5 \ln 5 - 5) - ((2+x) \ln(2+x) - 2 - x) \right] dx$$

$$= 2x(5 \ln 5 - 5) - \int_1^3 \frac{(2+x) \ln(2+x)}{u} + \left[2x + \frac{x^2}{2} \right]_1^3$$

$$= 10 \ln 5 - 10 - \left[\frac{(2+x)^2}{2} \ln(2+x) \right]_1^3 + \int_1^3 \frac{(2+x)^2}{2} \frac{1}{2+x} dx + (6 + 4.5 - 2 - 1)$$

$$= 10 \ln 5 - 2 - 12.5 \ln 5 + 4.5 \ln 3 + \frac{1}{2} \left[\frac{(2+x)^2}{2} \right]_1^3$$

$$= -2.5 \ln 5 + 4.5 \ln 3 - 2 + \frac{1}{4} (25 - 9)$$

$$= -2.5 \ln 5 + 4.5 \ln 3 + 2 \approx 1.980$$