

Zadatak 10. Kolika je površina lika omeđenog hiperbolom $y = \frac{1}{x}$, pravcem $x = 1$ i tangentom na tu istu hiperbolu položenom u njezinoj točki s apscisom $x = 2$?

Rješenje. $T\left(2, \frac{1}{2}\right)$, $y' = -\frac{1}{x^2}$, $y'(2) = -\frac{1}{4}$
 $y - \frac{1}{2} = -\frac{1}{4}(x - 2) \implies y - \frac{1}{2} = -\frac{1}{4}x + \frac{1}{2} \implies y = -\frac{1}{4}x + 1$ — tangenta.
 $P = \int_1^2 \left(\frac{1}{x} + \frac{1}{4}x - 1\right) dx = \left(\ln|x| + \frac{1}{8}x^2 - x\right) \Big|_1^2 = \ln 2 + \frac{1}{2} - 2 - \ln 1 - \frac{1}{8} + 1 =$
 $\ln 2 + \frac{4 - 16 - 1 + 8}{8} = \ln 2 - \frac{5}{8}.$

