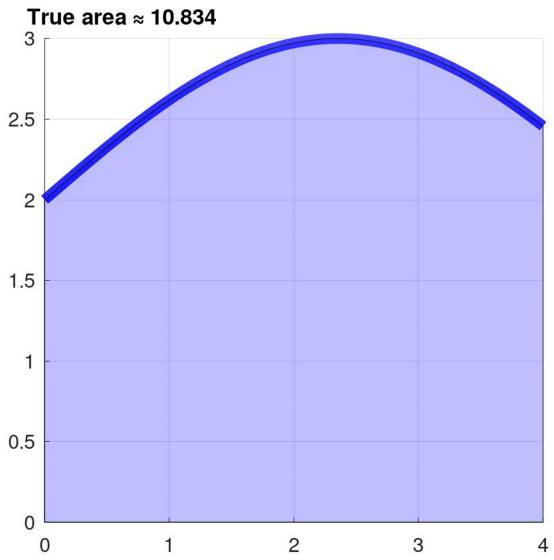
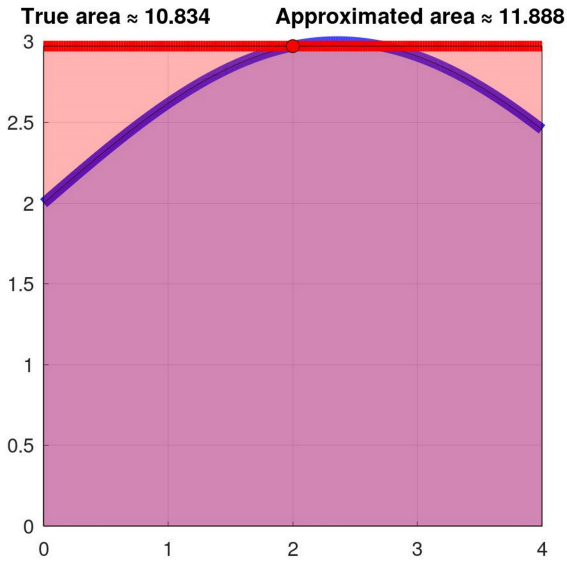
Lab 10

$$\int_a^b f(x)dx \approx ?$$



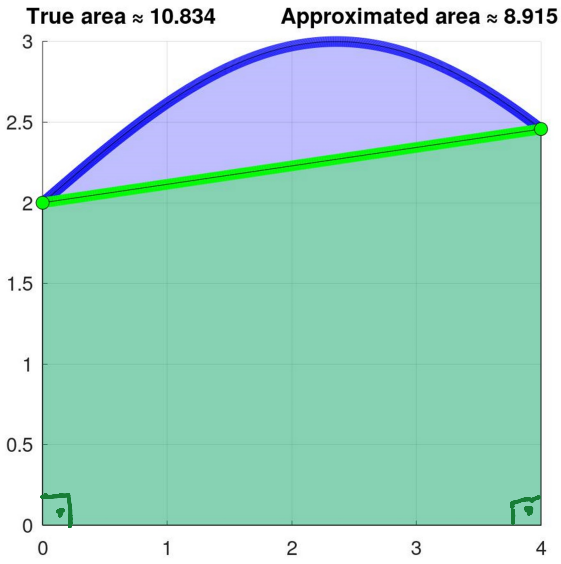
Formula dreptunghiului:

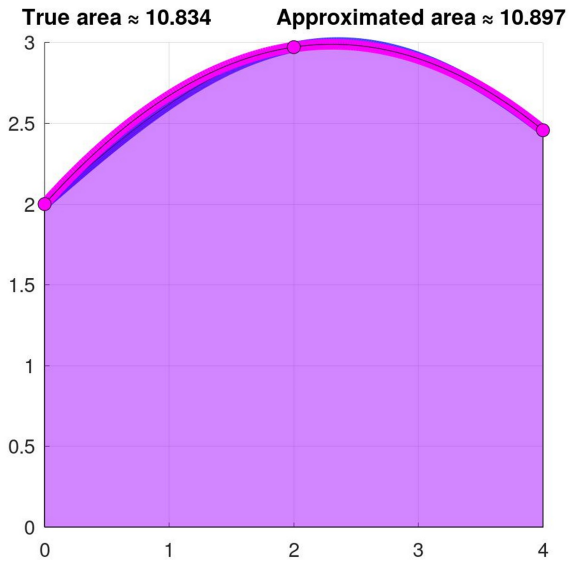
$$\int_a^b f(x)dx \approx f\left(\frac{a+b}{2}\right)(b-a)$$



Formula trapezului:

$$\int_a^b f(x)dx \approx \frac{f(b)+f(a)}{2}(b-a)$$





Formula lui Simpson:

$$\int_a^b f(x)dx \approx \frac{b-a}{6} \cdot \left(f(a) + 4f\left(\frac{a+b}{2}\right) + f(b) \right)$$

Schema lui Romberg

$T_{1,1}$ = form. rep. a trapez. pe 2^0 subintervale

$T_{2,1}$ = " " " 2^1 " "

$T_{3,1}$ = " " " 2^2 " "

$\vdots$

$T_{n,1}$ = " " " 2^{n-1} " "

$$T_{i,j} = \frac{4^{j-1} \cdot T_{i-1,j-1} - T_{i,j-1}}{4^{j-1} - 1}$$

$i = 2, \dots, n$

$j = 2, \dots, i$

$T_{1,1}$ $T_{2,1}$ $T_{3,1}$ $\vdots$ $T_{n-1,1}$ $T_{n,1}$

$T_{2,2}$ $T_{3,2}$ $\vdots$ $T_{n,2}$

$T_{3,3}$ $\vdots$ $T_{n,3}$

$\dots$ $\dots$

$\boxed{T_{n,n}}$