Numerical Algorithms – Complexity W4241
PP1

- Find three *different* $f \ni |f'| \leq 1$ on $[0,1]$ and you know $\int_0^1 f(t)dt$ exactly.

C3

- Write and test a program that implements:

$$\Phi = \frac{1}{m}\sum_{i=1}^{m} f(\frac{2i-1}{2m})$$

where $m(\epsilon) = \lfloor \frac{1}{4\epsilon} \rfloor + 1$

$$\text{Input} : \epsilon, f$$
$$\text{Output} : x \ni | \int_0^1 f(t)dt - x| \leq \epsilon$$

Hint: Don't choose ϵ too small!

- Test on the three examples of PP1 (above). Was an ϵ–approximation computed ?