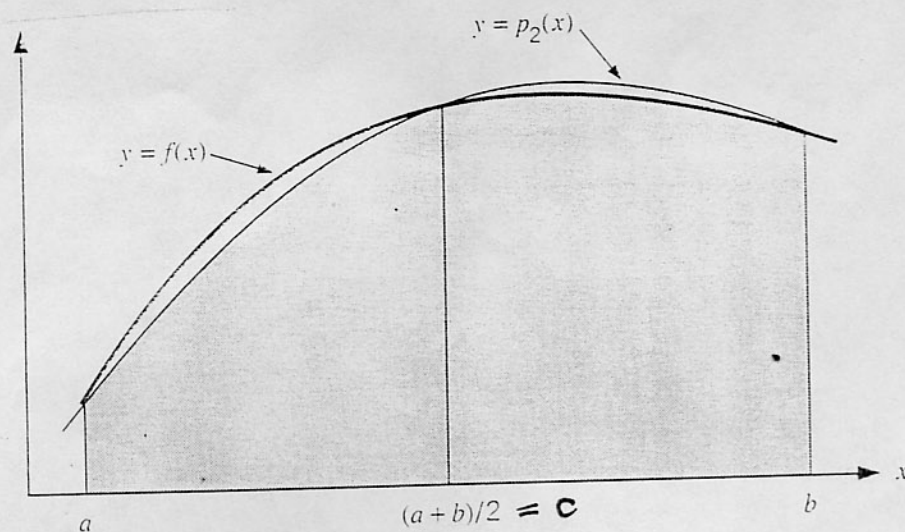


METODA SIMPSONA

(INTERPOLACJA KWADRATOWA)

4



$$I(f) \doteq \int_a^b p_2(x) dx$$

$$= \int_a^b \left[\frac{(x-c)(x-b)}{(a-c)(a-b)} f(a) + \frac{(x-a)(x-b)}{(c-a)(c-b)} f(c) + \frac{(x-a)(x-c)}{(b-a)(b-c)} f(b) \right] dx$$

$$S_2(f) = \frac{h}{3} \left[f(a) + 4f\left(\frac{a+b}{2}\right) + f(b) \right]$$

PRZYKŁAD

$$I = \int_0^1 \frac{dx}{1+x}$$

Then $h = (b-a)/2 = \frac{1}{2}$, and

$$S_2 = \frac{1/2}{3} \left[1 + 4 \left(\frac{2}{3} \right) + \frac{1}{2} \right] = \frac{25}{36} \doteq 0.69444$$

Błąd

$$I - S_2 = \log 2 - S_2 = -0.00130$$

b. dobre