

Théorème 2.2.

$$|B_n - S_n| = 2\pi \sum_{i=1}^n \underbrace{(x_i - x_{i-1})}_{= \frac{b-a}{n}} \left| \underbrace{f(y_i)}_{a_i} \sqrt{\underbrace{f'(z_i)^2 + 1}_{b_i}} - \underbrace{f(\xi_i)}_{c_i} \sqrt{1 + \underbrace{f'(\xi_i)^2}_{d_i}} \right|$$

$$\leq 2\pi \frac{b-a}{n} \sum_{i=1}^n \left(\underbrace{\underbrace{f(y_i)}_{a_i}}_{< M} \left(\sqrt{\underbrace{f'(z_i)^2 + 1}_{b_i}} - \sqrt{1 + \underbrace{f'(\xi_i)^2}_{d_i}} \right) + \right. \\ \left. \underbrace{\left(\underbrace{f(y_i) - f(\xi_i)}_{a_i} \right)}_{c_i} \sqrt{1 + \underbrace{f'(\xi_i)^2}_{d_i}} \right) \underbrace{\quad}_{< M}$$