E2

Korzystając z obliczeń w E1

$$f'(x) = \frac{f(x+h) - f(x-h)}{2h} - \frac{f'''(x)}{3!}h^2 - \frac{f^{(5)}(x)}{5!}h^4 - \dots \quad (1)$$

$$f(x+2h) = f(x) + 2h f'(x) + 2h^2 f^{(2)}(x) + \frac{8}{3!}h^3 f'''(x) + \dots$$

$$f(x-2h) = f(x) - 2h f'(x) + 2h^2 f^{(2)}(x) - \frac{8}{3!}h^3 f^{(3)}(x) + \dots$$

$$f(x+2h) - f(x-2h) = 4hf'(x) + 16 \cdot \frac{f^{(3)}(x)}{3!}h^3 + \dots$$

$$f'(x) = \frac{f(x+2h) - f(x-2h)}{4h} + 4\frac{f^{(3)}(x)}{3!}h^2 + 16\frac{f^{(5)}(x)}{5!}h^4 + \dots \quad (2)$$

$\frac{4\cdot(1) - (2)}{3}$:

$$f'(x) = \frac{8(f(x+h) - f(x-h)) + (f(x-2h) - f(x+2h))}{12h} + O(h^4)$$