I এর math

$$x = 3$$
$$h = 1.3$$

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

$$= 7 + (9 \times 1.3) + \left(\frac{10 \times (1.3)^2}{2!}\right) + \left(\frac{13 \times (1.3)^3}{3!}\right)$$

$$= 25.4101667.$$

① ⓐ একটা threshold ঠিক করে রাখবো error টা এবার less than/equal error আসলে stop.

ⓑ truncation: series a এর term cut
round: decimal point সুবিধা কমানো।

② (a) 3.3 এর side

(2) 1) higher accuracy

2) less computation

3) more independent variables.

How do we make those eqn?

① $(x_0, y_0) \rightarrow$ a point on first spline.
$(5, 7)$

$$a_1 x_0^2 + b_1 x_0 + C_0 = f(x_0)$$

$$\Rightarrow a_1(5)^2 + b_1 5 + C_1 = 7$$

$$a_1 x_1^2 + b_1 x_1^2 + C_1 = f(x_1)$$

$$\Rightarrow a_1(10)^2 + b_1(10) + C_1 = 11$$

$$a_2 x_1^2 + b_2 x_1 + C_2 = f(x_1)$$

$$a_2 x_2^2 + b_2 x_2 + C_2 = f(x_2)$$

in this way we get ③ 2n eqn. we still need

n eqn.

② for that, WE'll calc ⟨DERIVATIVES⟩

$(x_1, y_1) \rightarrow$ spline 1 8 2 (যার (x_1, y_1) এর derivati-

-ve পাওয়া যাবে।

তাহলে সব eqn এর জন্য $n-1$ eqn পাওয়া যাবে,

$\rightarrow 2a_1 x + b_1$
$\left. \begin{array}{l} 2a_2 x + b_2 \end{array} \right\}$ derivative of (x_1, y_1)

$$\boxed{2a_1 x_1 + b_1 = 2a_2 x_1 + b_2}$$

এখানে $2a_1$

$n = 3 \Rightarrow$

$$2a_3 x + b_3 = \cancel{2a_4 x} \; 2a_2 x + b_2$$

this way, we get $(n-1)$ spleen

③ still need 1 more ☺ $\left(a_0 = 0 \; \text{হলে} \right.$ linear spline assume ক

WE'll just effing assume it $\boxed{=}$

③ⓑ এর math

$n = 2$

$$f_2(x) = l_0(x) f(x_0) + l_1(x) f_1(x_1) + l_2(x) f_2(x_2)$$

$$l_0 = \frac{(x-x_1)(x_0-x_2)}{(x_0-x_1)(x_0-x_2)}$$

$$l_1 = \frac{(x-x_0)(x-x_2)}{(x_1-x_0)(x_1-x_2)}$$

$$l_2 = \frac{(x-x_0)(x-x_1)}{(x_2-x_0)(x_2-x_1)}$$

$x = 754.8$

$x_0 = 911.3$

$x_2 = 636.0$

$x_2 = 951.1$

$f(x_0) = 30.131$

$f(x_1) = 40.120$

$f(x_2) = 50.128$

$$f(x) = 35.089 °C$$

$$|E_a| = 2.0543\%$$

③ⓐ $3n$ eqns.

13 Sunday
২৮ জিলকদ ১৪৩৬
২৯ ভাদ্র ১৪২২

④ no QUES

2015
September

ⓑ Non-linear ⑥.④ এর example 6

ⓒ ① $y = Ae^{\lambda t}$

$ln(y) = ln(Ae^{\lambda t})$

$lny = lnA + ln e^{\lambda t}$

$$\frac{lny}{y} = \frac{lnA + \lambda t}{a_0 + a_1 x}$$

① $y = \dfrac{ax}{b+x}$

$$\frac{1}{y} = \frac{b+x}{ax}$$

$$\frac{1}{y} = \frac{b}{ax} + \frac{1}{a}$$

$$\frac{1}{y} \quad a_1 x + \frac{1}{a_0}$$