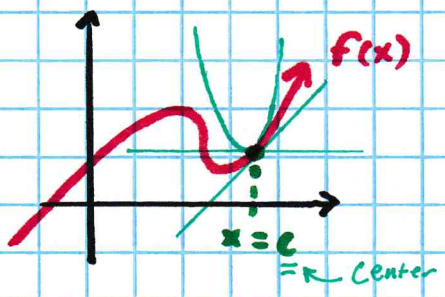

$$P_k(x) = a_0 + a_1 x + a_2 x^2 \cdots + a_k x^k$$

$$P_N(x) = a_0 + a_1(x-c) + a_2(x-c)^2 + \dots a_N(x-c)^N$$

$$f(x) \approx P_N(x)$$

$P_0(x) = a_0$; $a_0 = f(c)$

$P_1(x) = a_0 + a_1(x-c)$; $a_1 = f'(c)$; $P_1(c) = f(c)$; $P_1'(c) = a_0 = f(c)$

$P_2(x) = a_0 + a_1(x-c) + a_2(x-c)^2$

② $P_2''(c) = f''(c)$, ① $P_2'(c) = f'(c)$, ⓪ $P_2(c) = f(c)$

$P_2' = 0 + a_1 + 2a_2(x-c)$; $P_2'(c) = a_1$

$P_2'' = 0 + 2a_2$; $P_2''(c) = 2a_2$

$P_2(c) = a_0$

$a_0 = f(c)$; $a_1 = f'(c)$; $2a_2 = f''(c) \Rightarrow a_2 = \frac{f''(c)}{2}$

$P_3(x) = a_0 + a_1(x-c) + a_2(x-c)^2 + a_3(x-c)^3$

⓪ $P_3(c) = f(c)$ ① $P_3'(c) = f'(c)$ ② $P_3''(c) = f''(c)$ ③ $P_3^{(3)}(c) = f^{(3)}(c)$

$P_3'(x) = 0 + a_1 + 2a_2(x-c) + 3a_3(x-c)^2$; $P'(c) = a_1$

$P''(x) = 0 + 2a_2 + 2\cdot 3 a_3(x-c)$; $P''(c) = 2a_2$

$P_3^{(3)}(x) = 0 + 2\cdot 3 a_3$

$P_3^3(c) = 2\cdot 3 \cdot a_3$

$3!$

$a_0 = f(c)$ ←

$a_1 = f'(c)$ ←

$a_2 = \frac{f''(c)}{2}$ ←

$a_3 = \frac{f^3(c)}{3!}$ ←