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$$f'(x_0) = af(x_0-2h) + bf(x_0-h) + cf(x_0) + df(x_0+h) + ef(x_0+2h)$$

$$f'(x_0) = a\left(f(x_0) - 2hf'(x_0) + \frac{(2h)^2}{2}f''(x_0) - \frac{(2h)^3}{6}f'''(x_0) + \frac{(2h)^4}{24}f^{(4)}(x_0) - \frac{(2h)^5}{120}f^{(5)}(x_0)\right)$$

$$+ b\left(f(x_0) - hf'(x_0) + \frac{h^2}{2}f''(x_0) - \frac{h^3}{6}f'''(x_0) + \frac{h^4}{24}f^{(4)}(x_0) - \frac{h^5}{120}f^{(5)}(x_0)\right)$$

$$+ c\left(f(x_0)\right)$$

$$+ d\left(f(x_0) + hf'(x_0) + \frac{h^2}{2}f''(x_0) + \frac{h^3}{6}f'''(x_0) + \frac{h^4}{24}f^{(4)}(x_0) + \frac{h^5}{120}f^{(5)}(x_0)\right)$$

$$+ e\left(f(x_0) + 2hf'(x_0) + \frac{(2h)^2}{2}f''(x_0) + \frac{(2h)^3}{6}f'''(x_0) + \frac{(2h)^4}{24}f^{(4)}(x_0) + \frac{(2h)^5}{120}f^{(5)}(x_0)\right)$$

$$= (a+b+c+d+e)f(x_0)$$
$$+(-2a-b+d+2e)f'(x_0)\times h$$
$$+(4a+b+d+4e)f''(x_0)\times\frac{h^2}{2}$$
$$+(-8a-b+d+8e)f'''(x_0)\times\frac{h^3}{6}$$
$$+(16a+b+d+16e)f^{(4)}(x_0)\times\frac{h^4}{24}$$
$$+(-32a-b+d+32e)f^{(5)}(x_0)\times\frac{h^5}{120}$$

$a+b+c+d+e=0$

$-2a-b+d-2e=1$ 留 $f'(x_0)$

$4a+b+d+4e=0$

$-8a-b+d+8e=0$

$16a+b+d+16e=0$

$a=\frac{1}{12h}$ $b=\frac{2}{-3h}$ $c=0$ $d=\frac{2}{3h}$ $e=\frac{1}{-12h}$

$$f'(x_0)=\frac{1}{12h}f(x_0-2h)-\frac{2}{3h}f(x_0-h)+\frac{2}{3h}f(x_0+h)-\frac{1}{12h}f(x_0+2h)$$
$$+O(h^4)$$

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