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三校表142

三校表1404

永中鍾定中

ex. 1 已知 3次多项式 $f(x)$ 满足 $f(-1)=11$, $f(2)=-16$, $f(3)=3$, $f(4)=66$, 求 $f(x)$

$$f(x) = a(x+1)(x-2)(x-3) + b(x+1)(x-2) + c(x+1) + d$$

$$f(-1) = d = 11$$

$$f(2) = 3c + d = -16 \Rightarrow c = -9$$

$$f(3) = 4b + 4c + d = 3 \Rightarrow b = 7$$

$$f(4) = 10a + 10b + 5c + d = 66 \Rightarrow a = 3$$

$$\begin{aligned} \Rightarrow f(x) &= 3(x+1)(x-2)(x-3) + 7(x+1)(x-2) - 9(x+1) + 11 \\ &= 3(x^3 - 4x^2 + x + 6) + 7(x^2 - x - 2) - 9x - 9 + 11 \\ &= 3x^3 - 12x^2 + 3x + 18 + 7x^2 - 7x - 14 - 9x + 2 \\ &= 3x^3 - 5x^2 - 13x + 6 \end{aligned}$$