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(۱۲) $a_0 = a_1 = a_2 = \dots = a_n = 1$ ،$n \geq 3$

$P_n(x) = 1 + x + x^2 + \dots + x^n$

$P_n'(x) = 1 + 2x + 3x^2 + \dots + nx^{n-1}$

$P_n'(1) = 1 + 2 + 3 + \dots + n$

$120 = \frac{n(1+n)}{2} \rightarrow n = 15$

$n = -16$

(۹) $a_0 = 0$ ، $a_1 = 1$، $\dots a_n = \frac{1}{n}$ ،$n \geq 3$

$P_n(x) = 0 + x + \frac{1}{2}x^2 + \frac{1}{3}x^3 + \dots + \frac{1}{n-1}x^{n-1} + \frac{1}{n}x^n$

$P_n'(x) = 1 + x + x^2 + x^3 + \dots + x^{n-2} + x^{n-1}$

$P_n'(3) = 1 + 3 + 3^2 + 3^3 + \dots + 3^{n-1}$

$1093 = \frac{1(3^n - 1)}{3 - 1} \rightarrow \boxed{n = 7}$