$\boxed{Z1}$

$$A(x) = a_0 x^0 + a_1 x^1 + a_2 x^2 + \dots$$

$$s_0 = a_0$$
$$s_1 = a_0 + a_1$$
$$s_2 = a_0 + a_1 + a_2$$
$$\vdots$$
$$s_n = a_0 + a_1 + a_2 + \dots + a_n$$

$$S(x) = a_0 x^0 + (a_0 + a_1)x^1 + (a_0 + a_1 + a_2)x^2 + \dots$$
$$= a_0 (x^0 + x^1 + x^2 + \dots) +$$
$$a_1 (x^1 + x^2 + x^3 + \dots) +$$
$$a_2 (x^2 + x^3 + x^4 + \dots) + \dots =$$
$$= a_0 \left(\frac{1}{1-x}\right) + a_1 \left(\frac{x}{1-x}\right) + a_2 \left(\frac{x^2}{1-x}\right) + \dots$$

Wyciągam a_i przed sumę tak jak powyżej

$$S(x) = \sum_{n=0}^{\infty} s_n x^n = \sum_{n=0}^{\infty} \sum_{i=0}^{n} a_i x^n = \sum_{n=0}^{\infty} a_n \sum_{i=n}^{\infty} x^i =$$

$$= \sum_{n=0}^{\infty} a_n \left(\frac{x^n}{1-x}\right) = \frac{1}{1-x} \sum_{n=0}^{\infty} a_n x^n = \frac{A(x)}{1-x}$$

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