

1 du

1.1

$$(a_n) = (1, -1, 2, -1, 3, -3, \dots)$$

...

$$(b_n) = (1, -3, 5, -7, 9, -11, \dots)$$

prohodíme $-x$ za x , přičteme $(1, 1, 1, \dots)$ a vydělíme 2

$$\sum_{n \geq 0} (2n+1)x^n = \frac{1-x}{(1+x)^2}$$

$$(c_n) = (1, 4, 9, 16, 25, 36, \dots)$$

$$\sum_{n \geq 0} n^2 x^n$$

1.2

$$[x^5] : (2x-1)^{-2}$$

$$\frac{1}{(1-2x)^2} = \sum_{n=0}^{\infty} x^n 2^n (1+n)$$

$$[x^5] : 192$$

$$[x^5] : (1+x)^{-1/3}$$

$$\sum_{n=0}^{\infty} \binom{-\frac{1}{3}}{n} x^n$$

$$[x^5] : -\frac{91}{729}$$

1.3

$$a_0 = 0, a_1 = 1, a_n = a_{n-1} + a_{n-2} + 2$$

$$a_n = 2^n - 1$$

$$b_0 = 2, b_1 = 3, b_n = 3_{n-2} - 2b_{n-1}$$

$$a_n = \frac{9 - (-3)^n}{4}$$