

SUM AND PRODUCT NOTATION

1. WARMUP PROBLEMS

(1)	$\sum_{i=1}^6 i$	(10)	$\sum_{n=0}^6 \frac{2^n}{3}$
(2)	$\sum_{i=1}^6 17$	(11)	$\sum_{k=0}^{30} 2 \cdot (-1)^k$
(3)	$\sum_{i=1}^{14} 2i$	(12)	$\sum_{i=1}^5 \frac{i}{6-i}$
(4)	$\sum_{j=-3}^2 j - 1$	(13)	$\sum_{n=1}^5 \frac{n}{2^n}$
(5)	$\sum_{k=1}^{10} k^2 - k$	(14)	$\sum_{j=1}^n j$
(6)	$\sum_{n=1}^5 \frac{n-1}{n+1}$	(15)	$\sum_{j=1}^n j^2$
(7)	$\sum_{n=0}^{30} 2 \cdot (-1)^n$	(16)	$\sum_{j=1}^n 1$
(8)	$\sum_{\ell=0}^{30} 2 + (-1)^\ell$	(17)	$\sum_{j=1}^n (-1)^j$
(9)	$\sum_{n=0}^6 \frac{2^n}{3}$	(18)	$\sum_{j=1}^n \frac{1}{2^j}$

2. INTERESTING PROBLEMS

(1)

$$\sum_{\ell=1}^2 \log_{30}(15 \cdot \ell^2)$$

(2)

$$\sum_{j=1}^n j + (-1)^j(j+1)$$

(3)

$$\sum_{j=1}^n \frac{1}{j^2 + j}$$

(4)

$$\sum_{j=1}^n \frac{2}{j^2 + 3j + 2}$$

(5)

$$\sum_{j=0}^n \binom{n}{j}$$

(6)

$$\sum_{j=0}^n (-1)^j \binom{n}{j}$$

(7)

$$\sum_{k=0}^n \binom{n-k}{k}$$

(8)

$$\sum_{j=0}^n f_j$$

(9) Prove that

$$\sum_{n=1}^k n^3 = \left(\sum_{n=1}^k n \right)^2$$

(10) Prove that

$$\sum_{j=0}^n \binom{n}{j}^2$$