
Exercise 1. *Use the definition of summation Notation to find the values of each sum.*

$$\sum_{k=4}^{9}(3k+2);\ \sum_{s=2}^{9}\frac{1}{s};\ \sum_{i=0}^{7}2^i;\ \sum_{k=0}^{2}(3k-7)x^k;\ 3)\sum_{n=1}^{100}(-1)^n;$$
$$\sum_{n=1}^{5}\frac{(n+1)!}{n!};\ \sum_{n=1}^{3}\frac{7!}{n!(7-n)!}.$$

Exercise 2.

Rewrite the sum, using summation notation

$$x-\frac{x^3}{3}+\frac{x^5}{5}-\frac{x^7}{7};\ -\ln(3)+\ln(4)-\ln(5)+\cdots+\ln(20);$$
$$\frac{1}{2}(x-5)+\frac{1}{4}(x-5)^2+\frac{1}{6}(x-5)^3+\frac{1}{8}(x-5)^4.$$

Exercise 3.

Let us define twos sets $A=\{2,4,6,8\},\ B=\{1,3,4,5\}$.

1. *Find the sets* $A\cap B, A\cup B$, *using the Venn diagram.*
2. *Let* $E=\{0,1,2,3,4,5,6,7,8\}$ *be a subset of* $\mathbb{N}$ *; set of integer numbers.*
   — *Get the sets* $\complement_E A$ *and* $\complement_E B$.
3. *Find the cardinality of the set of all subsets of* A *; noted* $|\mathcal{P}(A)|$, *then determine* $\mathcal{P}(A)$.
4. *Let* x *be a natural variable and* $C=\{1,4,7,x\}, D=\{4,x,7,1\}$.
   — *Does* C *equal* D *?*
   — *Set* $x=2$. *Does* $x\in A$ *? Does* $x\in B$ *?*