**تمارين محلولة**

التمرين الأول : فكك المجاميع التالية

* $\sum\_{i=1}^{6}x\_{i}$
* $\sum\_{i=1}^{4}(x\_{i}-3)^{2}$
* $\sum\_{i=1}^{n}k$ حيث $k$ ثابت حقيقي

التمرين الثاني : أكتب المجاميع باستعمال رمز الجمع

* $a\_{1}b\_{1}+a\_{2}b\_{2}+…+a\_{n}b\_{n}$
* $x\_{1}+y\_{1}+x\_{2}+y\_{2}+…+x\_{n}+y\_{n}$
* $1+4+9+16+25+36$
* $a\_{1}+a\_{2}x+a\_{3}x^{2}+…$
* $x\_{1}\left(a\_{1}+b\_{1}\right)+x\_{2}\left(a\_{2}+b\_{2}\right)+…+x\_{n}\left(a\_{n}+b\_{n}\right)$
* $x\_{0}y\_{4}+x\_{1}y\_{7}+x\_{2}y\_{10}+…+x\_{n}y\_{m} $

التمرين الثالث : ليكن الجدول التالي :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$x\_{i}$$ | 2 | -5 | 4 | -8 |
| $$y\_{i}$$ | -3 | -8 | 10 | 6 |

أحسب ما يلي :

 $\sum\_{}^{}x\_{i}$ ، $ \sum\_{}^{}y\_{i} $ ، $\sum\_{}^{}x\_{i}y\_{i }$ ، $\sum\_{}^{}x\_{i}^{2} $ ، $\sum\_{}^{}y\_{i}^{2} $ ،

$\sum\_{}^{}x\_{i}\sum\_{}^{}y\_{i}$ ، $\sum\_{}^{}x\_{i}y\_{i}^{2}\_{ }$

$$\sum\_{}^{}\left(x\_{i}+y\_{i}\right)(x\_{i}-y\_{i})$$

**حل التمارين**

حل التمرين الأول :

* =$x\_{1}+x\_{2}+x\_{3}+x\_{4}+x\_{5}+x\_{6}$ $\sum\_{i=1}^{6}x\_{i}$
* $\sum\_{i=1}^{4}(x\_{i}-3)^{2}=\left(x\_{1}-3\right)^{2}+\left(x\_{2}-3\right)^{2}+\left(x\_{3}-3\right)^{2}+\left(x\_{3}-3\right)^{2}$

$\sum\_{i=1}^{n}k=k+k+…+k=nk$ -

حل التمرين الثاني :

* $a\_{1}b\_{1}+a\_{2}b\_{2}+…+a\_{n}b\_{n}=\sum\_{i=1}^{n}a\_{i}b\_{i}$
* $x\_{1}+y\_{1}+x\_{2}+y\_{2}+…+x\_{n}+y\_{n}=\sum\_{i=1}^{n}x\_{i}+\sum\_{i=1}^{n}y\_{i}$
* $=\sum\_{i=1}^{n}(x\_{i}+y\_{i})$
* $1+4+9+16+25+36=1^{2}+2^{2}+3^{2}+4^{2}+5^{2}+6^{2}=\sum\_{i=1}^{6}i^{2}$
* $a\_{1}+a\_{2}x+a\_{3}x^{2}+…=\sum\_{i=1}^{n}a\_{i}x^{i-1}$
* $x\_{1}\left(a\_{1}+b\_{1}\right)^{2}+x\_{2}\left(a\_{2}+b\_{2}\right)^{2}+…+x\_{n}\left(a\_{n}+b\_{n}\right)^{2}=\sum\_{i=1}^{n}x\_{i}\left(a\_{i}+b\_{i}\right)^{2}$
* $x\_{0}y\_{4}+x\_{1}y\_{7}+x\_{2}y\_{10}+…+x\_{n}y\_{m}=\sum\_{i=1}^{n+1}x\_{i-1}y\_{3i+1} $

جواب التمرين الثالث :

 $\sum\_{}^{}x\_{i}=-7$ ، $ \sum\_{}^{}y\_{i}=5 $ ، $\sum\_{}^{}x\_{i}y\_{i}=26$ ، $\sum\_{}^{}x\_{i}^{2}=109 $ ، $\sum\_{}^{}y\_{i}^{2}=209 $ ،

$\sum\_{}^{}x\_{i}\sum\_{}^{}y\_{i}=\left(-7\right)\left(5\right)=-35$، $\sum\_{}^{}x\_{i}y\_{i}^{2}=-190\_{ }$

$$\sum\_{}^{}\left(x\_{i}+y\_{i}\right)\left(x\_{i}-y\_{i}\right)=-100$$