

Sigma notation

Consider the following data:

$$x_1 = 5$$

$$x_2 = 4$$

$$x_3 = 7$$

$$y_1 = 8$$

$$y_2 = 9$$

$$y_3 = 6$$

Given this data, find the following sum:

$$\sum_{i=1}^n x_i^{2i} y_i^{n-i}$$

Part (a): Write down the sum symbolically *in algebraically correct form*. Note, for example, that, if we have the variable θ , then $1\theta^1 = \theta$. Also note that $\theta^0 = 1$. Furthermore, $\phi + -\theta$ is simply incorrect, while $\phi + (-\theta)$ is correct but not simplified. The simplified and correct form is $\phi - \theta$. Finally, the parentheses in $(\phi_1\theta_1) = (\phi_2\theta_2)$ are not necessary. Instead $\phi_1\theta_1 = \phi_2\theta_2$ is perfectly unambiguous, and therefore correct.

Part (b): Write down the numerical sum. It may be a big number, or it may be a small number. It may be positive, negative, or zero. In this particular case the number is an integer, although that is not necessarily so just because you are using sigma notation.