Practice quiz on Simplification Rules and Sigma Notation
Practice Quiz • 20 min

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Practice quiz on Simplification Rules and Sigma Notation

TOTAL POINTS 6

1. Which of the numbers below is equal to the following summation: $\Sigma_{i=1}^{3} i^2$? 1 / 1 point

- 30
- 14 (selected)
- 1
- 9

Correct
We compute $\Sigma_{i=1}^{3} i^2 = 1^2 + 2^3 + 3^2 = 14$

2. Suppose that $A = \Sigma_{k=1}^{100} k^4$ and $B = \Sigma_{j=1}^{100} j^4$ 1 / 1 point

Which of the following statements is true?

- There is not enough information to do the problem
- $A = B$ (selected)
- $B > A$
- $A > B$

Correct
A = B. Both summations evaluate to the same number, since k and j are just dummy indices.

3. Which of the numbers below is equal to the summation $\Sigma_{i=1}^{10} 7$? 1 / 1 point

- 70 (selected)
- 7
- 55
- 0

Correct
According to one of our Sigma notation simplification rules, this summation is just equal to 10 copies of the number 7 all added together, and so we get $10 \times 7 = 70$.

4. Suppose that $X = \Sigma_{i=1}^{5} i^3$ and $Y = \Sigma_{i=1}^{5} i^4$. 1 / 1 point

Which of the following expressions is equal to the summation $\Sigma_{i=1}^{5} (2i^3 + 5i^4)$?

- 3375
- 7
- $2X + 5Y$ (selected)
- $X + Y$

Correct
To get here, you apply two of our Sigma notation simplification rules $\Sigma_{i=1}^{5} 2i^3 + 5i^4 = 2\left(\Sigma_{i=1}^{5} i^3\right) + 5\left(\Sigma_{i=1}^{5} i^4\right) = 2X + 5Y$.

5. Which of the following numbers is the mean μ_Z of the set $Z = \{-2, 4, 7\}$? 1 / 1 point

- 3 (selected)
- 9
- $\frac{13}{3}$
- 4

Correct
To get the mean of a set of numbers, you need to perform two steps: first add them all up (in this case getting $-2 + 4 + 7 = 9$), and then divide by the number of elements in the set (in this case that number is 3).

So you should obtain $\mu_Z = \frac{9}{3} = 3$, which you did!

6. Suppose the set X has five numbers in it: $X = \{x_1, x_2, x_3, x_4, x_5\}$. Which of the following expression 1 / 1 point

represents the mean of the set X?

- ○ $\sum_{i=1}^{5} x_i$
- ○ $\frac{1}{5}[\sum_{i=1}^{5}(x_i - \mu_X)^2]$
- ◉ $\frac{1}{5}[\sum_{i=1}^{5} x_i]$
- ○ $\frac{1}{N}[\sum_{i=1}^{N} x_i]$

✓ **Correct**

To obtain the mean of a set of numbers, you first add them all up (which is expressed here by the sigma operation inside the square brackets) and then you divide by the number of numbers in the set (which is expressed here by the $\frac{1}{5}$ outside the square brackets).