

WRITE YOUR NAME:

MAC 2312 Quiz 1
Tuesday January 16th

Evaluate the sum.

$$\sum_{k=1}^6 (3k + 6)$$

$$\begin{aligned} \text{METHOD 1: } & (3 \cdot 1 + 6) + (3 \cdot 2 + 6) + (3 \cdot 3 + 6) + (3 \cdot 4 + 6) + (3 \cdot 5 + 6) + (3 \cdot 6 + 6) \\ &= (3 + 6) + (6 + 6) + (9 + 6) + (12 + 6) + (15 + 6) + (18 + 6) \\ &= 9 + 12 + 15 + 18 + 21 + 24 \\ &= \underbrace{(9 + 24)}_{33} + \underbrace{(12 + 21)}_{33} + \underbrace{(15 + 18)}_{33} = 3 \cdot 33 = \boxed{99} \end{aligned}$$

$$\begin{aligned} \text{METHOD 2: } & \sum_{k=1}^6 (3k + 6) = \sum_{k=1}^6 (3k) + \underbrace{\sum_{k=1}^6 6}_{6+6+6+6+6+6} \\ &= 3 \sum_{k=1}^6 k + 6 \cdot 6 = 3(1 + 2 + 3 + 4 + 5 + 6) + 36 \\ &= 3(21) + 36 = 63 + 36 = \boxed{99} \end{aligned}$$