

Quiz #4 Math 181

① Compute the sums:

$$\sum_{k=8}^{17} k^2$$

$$\sum_{k=3}^{10} \left(\frac{1}{2}\right)^k$$

5. $\sum_{k=1}^n k = \frac{n^2}{2} + \frac{n}{2}$.

6. $\sum_{k=1}^n k^2 = \frac{n^3}{3} + \frac{n^2}{2} + \frac{n}{6}$.

7. $\sum_{k=1}^n k^3 = \frac{n^4}{4} + \frac{n^3}{2} + \frac{n^2}{4}$.

8. (a) $\sum_{k=0}^n x^k = \frac{1-x^{n+1}}{1-x}$ if $x \neq 1$. Note: x^0 is defined to be 1.

② Prove

$$1+3+5+\dots+(2n-1) = n^2$$

by induction.

③ Find the vertex of the parabola

$$y = x^2 + 6x - 7$$

by completing the square.