

a) Let $f(n) = n$. Then

$$\Delta f(n) = n + 1 - n = 1.$$

b) Let $f(n) = n^2$. Then

$$\Delta f(n) = (n + 1)^2 - n^2 = 2n + 1.$$

c) Let $f(n) = n^3$. Then

$$\Delta f(n) = (n + 1)^3 - n^3 = 3n^2 + 3n + 1.$$