

Problem 21

In each of Problems 21 through 27, rewrite the given expression as a sum whose generic term involves x^n .

$$\sum_{n=2}^{\infty} n(n-1)a_n x^{n-2}$$

Solution

Substitute $k = n - 2$.

$$\sum_{k+2=2}^{\infty} (k+2)(k+1)a_{k+2}x^k$$

Solve for k .

$$\sum_{k=0}^{\infty} (k+2)(k+1)a_{k+2}x^k$$

As k is only a dummy index, it can be replaced with n .

$$\sum_{n=0}^{\infty} (n+2)(n+1)a_{n+2}x^n$$