

Legyen $f(x)$ konvex függvény, legyen $u_1 \geq u_2 \geq \dots \geq u_k$ és $v_1 \geq v_2 \geq \dots \geq v_k$; vezessük be a

$$(13) \quad D_1 = \frac{f(v_1) - f(u_1)}{v_1 - u_1}, D_2 = \frac{f(v_2) - f(u_2)}{v_2 - u_2}, \dots, D_k = \frac{f(v_k) - f(u_k)}{v_k - u_k}$$

továbbá az

$$U_1 = u_1, U_2 = u_1 + u_2, \dots, U_k = u_1 + u_2 + \dots + u_k$$

és

$$(14) \quad V_1 = v_1, V_2 = v_1 + v_2, \dots, V_k = v_1 + v_2 + \dots + v_k$$

jelöléseket. Legyen

$$(15) \quad U_1 < V_1, U_2 < V_2, \dots, U_{k-1} < V_{k-1}, \text{ de } U_k = V_k.$$

Mutassuk meg, hogy ekkor

$$(16) \quad \begin{aligned} &U_1(D_1 - D_2) + U_2(D_2 - D_3) + \dots + U_{k-1}(D_{k-1} - D_k) + \\ &+ U_k D_k < V_1(D_1 - D_2) + V_2(D_2 - D_3) + \dots + \\ &+ V_{k-1}(D_{k-1} - D_k) + V_k D_k \end{aligned}$$

és

$$(17) \quad u_1 D_1 + u_2 D_2 + \dots + u_k D_k < v_1 D_1 + v_2 D_2 + \dots + v_k D_k$$