Question # 10714

Factorize $(x-y)^3+(y-z)^3+(z-x)^3$.

Solution. Using identity $a^3+b^3+c^3-3abc=(a+b+c)(a^2+b^2+c^2-ab-bc-ac)$, one can get that $(x-y)^3+(y-z)^3+(z-x)^3=3(x-y)(x-z)(y-z)+(x-y+y-z+z-x)\cdot(\ldots)=3(x-y)(y-z)(x-z)+0$. .

Answer $3(x-y)(y-z)(x-z)$.