Povzetek

Delo obravnava posplošitve ravninskih struktur, vezanih na trikotnik, v prostor. Pokažem, da je težišče tetraedra skupna točka težiščnih ravnin robov tetraedra. Simetrijske ravnine robov tetraedra, kot analog simetral daljic trikotnika, se sekajo v središču tetraedru očrtane sfere. Višine tetraedra, premice skozi oglišča in pravokotne na oglišču nasprotno ploskev tetraedra, pa so v splošnem mimobežnice. Analog višinske točke je Mongejeva točka tetraedra, ki leži na premici skozi težišče in središče tetraedru očrtane sfere, na t.i. Eulerjevi premici tetraedra. Podan je pogoj za skupno točko vseh višin tetraedra, ki okarakterizira poseben razred tetraedrov. To so ortocentrični tetraedri z višinsko točko. Tudi Soddyjevi krožnici trikotnika imata svoj tridimenzionalni analog v Soddyjevih sferah le med posebnimi tetraedri, v delu poimenovanimi tetraedri štirih krogel.

Osnovne lastnosti tetraedrov lahko izberemo tudi iz lastnosti tetraedru očrtanega paralelepipeda. Tako skozi simetrije kvadra obravnavam kvadru včrtani tetraeder, poimenovan enakokraki tetraeder.

Podana sta Cevov in Menelajev izrek za tetraeder ter obravnava konfiguracij delilnih točk, ki ustrezajo njunim pogojem. Središče včrtane in središča tetraedru pričrtanih sfer predstavljajo osem Cevovih točk za ustrezne šesterice delilnih točk na premicah nosilkah robov tetraedra, ki jih dobimo kot presečišča s simetrijskimi ravninami diedrskih kotov nasprotnih robov tetraedra.

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