

$$(a^2 + b^2 + c^2 + d^2)(x^2 + y^2 + z^2 + t^2) =$$

$$= (ax + by + cz + dt)^2 + (ay - bx + ct - dz)^2 + (az - bt - cx + dy)^2 + (at + bz - cy - dx)^2.$$

$$(a_1^2 + a_2^2 + a_3^2 + a_4^2 + a_5^2 + a_6^2 + a_7^2 + a_8^2) \cdot (b_1^2 + b_2^2 + b_3^2 + b_4^2 + b_5^2 + b_6^2 + b_7^2 + b_8^2) =$$

$$(a_1b_1 - a_2b_2 - a_3b_3 - a_4b_4 - a_5b_5 - a_6b_6 - a_7b_7 - a_8b_8)^2 +$$

$$(a_2b_1 + a_1b_2 + a_4b_3 - a_3b_4 + a_6b_5 - a_5b_6 - a_8b_7 + a_7b_8)^2 +$$

$$(a_3b_1 - a_4b_2 + a_1b_3 + a_2b_4 + a_7b_5 + a_8b_6 - a_5b_7 - a_6b_8)^2 +$$

$$(a_4b_1 + a_3b_2 - a_2b_3 + a_1b_4 + a_8b_5 - a_7b_6 + a_6b_7 - a_5b_8)^2 +$$

$$(a_5b_1 - a_6b_2 - a_7b_3 - a_8b_4 + a_1b_5 + a_2b_6 + a_3b_7 + a_4b_8)^2 +$$

$$(a_6b_1 + a_5b_2 - a_8b_3 + a_7b_4 - a_2b_5 + a_1b_6 - a_4b_7 + a_3b_8)^2 +$$

$$(a_7b_1 + a_8b_2 + a_5b_3 - a_6b_4 - a_3b_5 + a_4b_6 + a_1b_7 - a_2b_8)^2 +$$

$$(a_8b_1 - a_7b_2 + a_6b_3 + a_5b_4 - a_4b_5 - a_3b_6 + a_2b_7 + a_1b_8)^2$$