

MAE5009: Continuum Mechanics B

Assignment 05: Notation

Due December 1, 2021

1. Please expand the following Cartesian tensor notations and give final values if possible:

(a) B_{ijj}

(b) $a_i T_{ij}$

(c) $a_i b_j S_{ij}$

(d) δ_{ii}

(e) $\delta_{ij}\delta_{ij}$

(f) $\delta_{ij}\delta_{ik}\delta_{jk}$

(g) $\varepsilon_{ijk}\varepsilon_{kij}$

2. Prove the following:

(a) $\delta_{ik} \varepsilon_{ikm} = 0$

(b) $\varepsilon_{ijk} \varepsilon_{ijk} = 6$

$$(c) \ \varepsilon_{ijk}\varepsilon_{ijp} = 2\delta_{kp}$$

$$(d) \ \delta_{ij}\delta_{jk}\delta_{km} = \delta_{im}$$