Homework problems #10

1. Prove that the Lie derivative satisfies the Leibniz rule :

$$\Delta_\epsilon \left(A^\mu{}_\nu B^\lambda \right) = A^\mu{}_\nu \Delta_\epsilon B^\lambda + \left(\Delta_\epsilon A^\mu{}_\nu \right) B^\lambda$$

and that it commutes with the contraction :

$$\delta^\lambda_\nu \Delta_\epsilon T^{\mu\nu}{}_\lambda = \Delta_\epsilon T^{\mu\lambda}{}_\lambda \,.$$