Problem 3. $T'_{iij} = \underbrace{M_{ik}M_{il}}M_{jm}T_{klm} = M_{jm}T_{kkm}$ ✓

$$\underbrace{M^T_{ki}M_{il}} = (\underbrace{M^T M}_{I})_{kl} = \delta_{kl}$$

Problem 4. $T'_{ijk}V'_k = M_{il}M_{jm}\underbrace{M_{kn}M_{kp}}_{\delta_{np}}T_{lmn}V_p = M_{il}M_{jm}T_{lmn}V_n$ ✓

Problem 5. $T'_{ijklm}S'_{lm} = M_{ia}M_{jb}M_{kc}M_{ld}M_{me}M_{lf}M_{mg}T_{abcde}S_{fg}$

$\delta_{df} \quad \delta_{eg}$
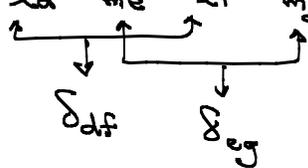
$$= M_{ia}M_{jb}M_{kc}T_{abcde}S_{de}$$ ✓

Problem 6. The hint does it.

Problem 7. $T'_{ijk} + S'_{ijk} = M_{jl}M_{km}T_{lm} + M_{jl}M_{km}S_{lm}$

$$= M_{jl}M_{km}(T_{lm}+S_{lm})$$

Doing the rank-4 case just adds on 2 more indices.