Tensor Symmetry (43)

$n = 2$	$n = 3$	$n = 4$
$T_{ij} = T_{ji}$	$T_{ijk} = T_{jik} = T_{kji} = T_{ikj}$	$T_{ijkl} = T_{jikl} = T_{kjil} = T_{ljki} = T_{ikjl} = T_{ilkj} = T_{ijlk}$
$S_{ij} = -S_{ji}$	$S_{ijk} = -S_{jik} = -S_{kji} = -S_{ikj}$	$S_{ijkl} = -S_{jikl} = -S_{kjil} = -S_{ljki} = -S_{ikjl} = -S_{ilkj} = -S_{ijlk}$
e^{ij} e_{ij}	e^{ijk} e_{ijk}	e^{ijkl} e_{ijkl}

Determinants (44)

$n = 2$	$n = 3$	$n = 4$
$Ae^{rs} = e^{ij} a_i^r a_j^s$ $Ae_{rs} = e^{ij} a_{ir} a_{js}$ $Ae^{rs} = e_{ij} a^{ir} a^{js}$	$Ae^{rst} = e^{ijk} a_i^r a_j^s a_k^t$ $Ae_{rst} = e^{ijk} a_{ir} a_{js} a_{kt}$ $Ae^{rst} = e_{ijk} a^{ir} a^{js} a^{kt}$	$Ae^{rstu} = e^{ijkl} a_i^r a_j^s a_k^t a_l^u$ $Ae_{rstu} = e^{ijkl} a_{ir} a_{js} a_{kt} a_{lu}$ $Ae^{rstu} = e_{ijkl} a^{ir} a^{js} a^{kt} a^{lu}$
$A = \frac{1}{2!} e^{ij} e_{rs} a_i^r a_j^s$ $A = \frac{1}{2!} e^{ij} e^{rs} a_{ir} a_{js}$ $A = \frac{1}{2!} e_{ij} e_{rs} a^{ir} a^{js}$	$A = \frac{1}{3!} e^{ijk} e_{rst} a_i^r a_j^s a_k^t$ $A = \frac{1}{3!} e^{ijk} e^{rst} a_{ir} a_{js} a_{kt}$ $A = \frac{1}{3!} e_{ijk} e_{rst} a^{ir} a^{js} a^{kt}$	$A = \frac{1}{4!} e^{ijkl} e_{rstu} a_i^r a_j^s a_k^t a_l^u$ $A = \frac{1}{4!} e^{ijkl} e^{rstu} a_{ir} a_{js} a_{kt} a_{lu}$ $A = \frac{1}{4!} e_{ijkl} e_{rstu} a^{ir} a^{js} a^{kt} a^{lu}$

Delta System (45)

$n=2$	$n=3$	$n=4$
$\delta^{ij}_{rs}=\begin{vmatrix}\delta^i_r & \delta^i_s\\ \delta^j_r & \delta^j_s\end{vmatrix}$	$\delta^{ijk}_{rst}=\begin{vmatrix}\delta^i_r & \delta^i_s & \delta^i_t\\ \delta^j_r & \delta^j_s & \delta^j_t\\ \delta^k_r & \delta^k_s & \delta^k_t\end{vmatrix}$	$\delta^{ijkl}_{rstu}=\begin{vmatrix}\delta^i_r & \delta^i_s & \delta^i_t & \delta^i_u\\ \delta^j_r & \delta^j_s & \delta^j_t & \delta^j_u\\ \delta^k_r & \delta^k_s & \delta^k_t & \delta^k_u\\ \delta^l_r & \delta^l_s & \delta^l_t & \delta^l_u\end{vmatrix}$
$\delta^{ij}_{rj}=\delta^i_r$ $\delta^i_i=2$	$\delta^{ijk}_{rsk}=\delta^{ij}_{rs}$ $\delta^{ij}_{rj}=2\delta^i_r$ $\delta^i_i=3$	$\delta^{ijkl}_{rstl}=\delta^{ijk}_{rst}$ $\delta^{ijk}_{rsk}=2\delta^{ij}_{rs}$ $\delta^{ij}_{rj}=3\delta^i_r$ $\delta^i_i=4$
$\delta^{ij}_{rs}=e^{ij}e_{rs}$	$\delta^{ijk}_{rst}=e^{ijk}e_{rst}$	$\delta^{ijkl}_{rstu}=e^{ijkl}e_{rstu}$
$A=\frac{1}{2!}\delta^{ij}_{rs}a^r_i a^s_j$	$A=\frac{1}{3!}\delta^{ijk}_{rst}a^r_i a^s_j a^t_k$	$A=\frac{1}{4!}\delta^{ijkl}_{rstu}a^r_i a^s_j a^t_k a^u_l$

Relative Tensors (46)

$n = 2$	$n = 3$	$n = 4$
$e^{i'j'} = Je^{ij}J_i^{i'}J_j^{j'}$ $e_{i'j'} = J^{-1}e_{ij}J_{i'}^{i}J_{j'}^{j}$	$e^{i'j'k'} = Je^{ijk}J_i^{i'}J_j^{j'}J_k^{k'}$ $e_{i'j'k'} = J^{-1}e_{ijk}J_{i'}^{i}J_{j'}^{j}J_{k'}^{k}$	$e^{i'j'k'l'} = Je^{ijkl}J_i^{i'}J_j^{j'}J_k^{k'}J_l^{l'}$ $e_{i'j'k'l'} = J^{-1}e_{ijkl}J_{i'}^{i}J_{j'}^{j}J_{k'}^{k}J_{l'}^{l}$
$\left\|a^{\cdot'}_{\cdot'}\right\| = \|a^{\cdot}_{\cdot}\|$ $\|a_{\cdot'\cdot'}\| = J^2\|a_{\cdot\cdot}\|$ $\left\|a^{\cdot'\cdot'}\right\| = J^{-2}\|a^{\cdot\cdot}\|$	$\left\|a^{\cdot'}_{\cdot'}\right\| = \|a^{\cdot}_{\cdot}\|$ $\|a_{\cdot'\cdot'}\| = J^2\|a_{\cdot\cdot}\|$ $\left\|a^{\cdot'\cdot'}\right\| = J^{-2}\|a^{\cdot\cdot}\|$	$\left\|a^{\cdot'}_{\cdot'}\right\| = \|a^{\cdot}_{\cdot}\|$ $\|a_{\cdot'\cdot'}\| = J^2\|a_{\cdot\cdot}\|$ $\left\|a^{\cdot'\cdot'}\right\| = J^{-2}\|a^{\cdot\cdot}\|$

Cofactors (47)

$n = 2$	$n = 3$	$n = 4$
$A_r^i = \frac{\partial A}{\partial a_i^r} = \frac{1}{1!}\delta_{rs}^{ij}a_j^s$ $A^{ir} = \frac{\partial A}{\partial a_{ri}} = \frac{1}{1!}e^{ij}e^{rs}a_{sj}$ $A_{ir} = \frac{\partial A}{\partial a^{ri}} = \frac{1}{1!}e_{ij}e_{rs}a^{sj}$	$A_r^i = \frac{\partial A}{\partial a_i^r} = \frac{1}{2!}\delta_{rst}^{ijk}a_j^s a_k^t$ $A^{ir} = \frac{\partial A}{\partial a_{ri}} = \frac{1}{2!}e^{ijk}e^{rst}a_{sj}a_{tk}$ $A_{ir} = \frac{\partial A}{\partial a^{ri}} = \frac{1}{2!}e_{ijk}e_{rst}a^{sj}a^{tk}$	$A_r^i = \frac{\partial A}{\partial a_i^r} = \frac{1}{3!}\delta_{rstu}^{ijkl}a_j^s a_k^t a_l^u$ $A^{ir} = \frac{\partial A}{\partial a_{ri}} = \frac{1}{3!}e^{ijkl}e^{rstu}a_{sj}a_{tk}a_{ul}$ $A_{ir} = \frac{\partial A}{\partial a^{ri}} = \frac{1}{3!}e_{ijkl}e_{rstu}a^{sj}a^{tk}a^{ul}$
$A_r^i a_m^r = A\delta_m^i$ $A^{ir}a_{rm} = A\delta_m^i$ $A_{ir}a^{rm} = A\delta_i^m$	$A_r^i a_m^r = A\delta_m^i$ $A^{ir}a_{rm} = A\delta_m^i$ $A_{ir}a^{rm} = A\delta_i^m$	$A_r^i a_m^r = A\delta_m^i$ $A^{ir}a_{rm} = A\delta_m^i$ $A_{ir}a^{rm} = A\delta_i^m$

Volume Element (48)

$n = 2$	$n = 3$	$n = 4$
$\sqrt{Z'} = \lvert J \rvert \sqrt{Z}$	$\sqrt{Z'} = \lvert J \rvert \sqrt{Z}$	$\sqrt{Z'} = \lvert J \rvert \sqrt{Z}$
$\frac{\partial \sqrt{Z}}{\partial Z^i} = \sqrt{Z}\Gamma_{mi}^{m}$	$\frac{\partial \sqrt{Z}}{\partial Z^i} = \sqrt{Z}\Gamma_{mi}^{m}$	$\frac{\partial \sqrt{Z}}{\partial Z^i} = \sqrt{Z}\Gamma_{mi}^{m}$

Voss-Weyl Formula (49)

$n = 2$	$n = 3$	$n = 4$
$\operatorname{div} \vec{T} = \nabla_i T^i = \frac{1}{\sqrt{Z}} \frac{\partial}{\partial Z^i} \left(\sqrt{Z} T^i \right)$	$\operatorname{div} \vec{T} = \nabla_i T^i = \frac{1}{\sqrt{Z}} \frac{\partial}{\partial Z^i} \left(\sqrt{Z} T^i \right)$	$\operatorname{div} \vec{T} = \nabla_i T^i = \frac{1}{\sqrt{Z}} \frac{\partial}{\partial Z^i} \left(\sqrt{Z} T^i \right)$
$\nabla^2 f = \nabla_i \nabla^i f = \frac{1}{\sqrt{Z}} \frac{\partial}{\partial Z^i} \left(\sqrt{Z} Z^{ij} \frac{\partial f}{\partial Z^j} \right)$	$\nabla^2 f = \nabla_i \nabla^i f = \frac{1}{\sqrt{Z}} \frac{\partial}{\partial Z^i} \left(\sqrt{Z} Z^{ij} \frac{\partial f}{\partial Z^j} \right)$	$\nabla^2 f = \nabla_i \nabla^i f = \frac{1}{\sqrt{Z}} \frac{\partial}{\partial Z^i} \left(\sqrt{Z} Z^{ij} \frac{\partial f}{\partial Z^j} \right)$

Levi-Civita Symbols (51)

$n = 2$	$n = 3$	$n = 4$
$\varepsilon^{ij} = \frac{1}{\sqrt{Z}} e^{ij}$ $\varepsilon_{ij} = \sqrt{Z} e_{ij}$	$\varepsilon^{ijk} = \frac{1}{\sqrt{Z}} e^{ijk}$ $\varepsilon_{ijk} = \sqrt{Z} e_{ijk}$	$\varepsilon^{ijkl} = \frac{1}{\sqrt{Z}} e^{ijkl}$ $\varepsilon_{ijkl} = \sqrt{Z} e_{ijkl}$
$\delta^{ij}_{rs} = \varepsilon^{ij} \varepsilon_{rs}$	$\delta^{ijk}_{rst} = \varepsilon^{ijk} \varepsilon_{rst}$	$\delta^{ijkl}_{rstu} = \varepsilon^{ijkl} \varepsilon_{rstu}$
$\varepsilon^{ij} Z_{ir} Z_{js} = \varepsilon_{rs}$ $\varepsilon_{ij} Z^{ir} Z^{js} = \varepsilon^{rs}$	$\varepsilon^{ijk} Z_{ir} Z_{js} Z_{kt} = \varepsilon_{rst}$ $\varepsilon_{ijk} Z^{ir} Z^{js} Z^{kt} = \varepsilon^{rst}$	$\varepsilon^{ijkl} Z_{ir} Z_{js} Z_{kt} Z_{lu} = \varepsilon_{rstu}$ $\varepsilon_{ijkl} Z^{ir} Z^{js} Z^{kt} Z^{lu} = \varepsilon^{rstu}$
$\nabla_m \varepsilon^{ij} = 0$ $\nabla_m \varepsilon_{ij} = 0$	$\nabla_m \varepsilon^{ijk} = 0$ $\nabla_m \varepsilon_{ijk} = 0$	$\nabla_m \varepsilon^{ijkl} = 0$ $\nabla_m \varepsilon_{ijkl} = 0$

Cross Product (52)

$n=2$	$n=3$	$n=4$
$W^i = \varepsilon^{ij} U_j$ $W_i = \varepsilon_{ij} U^j$ $\vec{W} = \varepsilon^{ij} U_j \vec{Z}_i$ $= \varepsilon_{ij} U^j \vec{Z}^i$	$W^i = \varepsilon^{ijk} U_j V_k$ $W_i = \varepsilon_{ijk} U^j V^k$ $\vec{W} = \varepsilon^{ijk} U_j V_k \vec{Z}_i = \varepsilon_{ijk} U^j V^k \vec{Z}^i$	$W^i = \varepsilon^{ijkl} U_j V_k S_l$ $W_i = \varepsilon_{ijkl} U^j V^k S^l$ $\vec{W} = \varepsilon^{ijkl} U_j V_k S_l \vec{Z}_i = \varepsilon_{ijkl} U^j V^k S^l \vec{Z}^i$
	$\varepsilon_{ijk} U^j V^k = -\varepsilon_{ijk} V^j U^k$	$\varepsilon_{ijkl} U^j V^k S^l = -\varepsilon_{ijkl} V^j U^k S^l = -\varepsilon_{ijkl} S^j V^k U^l =$ $-\varepsilon_{ijkl} U^j S^k V^l$
$(\varepsilon_{ij} U^j) U^i = 0$	$(\varepsilon_{ijk} U^j V^k) U^i = (\varepsilon_{ijk} U^j V^k) V^i = 0$	$(\varepsilon_{ijkl} U^j V^k S^l) U^i = (\varepsilon_{ijkl} U^j V^k S^l) V^i = (\varepsilon_{ijkl} U^j V^k S^l) S^i = 0$
$\lvert\vec{W}\rvert = \lvert\vec{U}\rvert$	$\lvert\vec{W}\rvert^2 = \lvert\vec{U}\rvert^2 \lvert\vec{V}\rvert^2 - (\vec{U} \cdot \vec{V})^2$ $\lvert\vec{W}\rvert = \lvert\vec{U}\rvert \lvert\vec{V}\rvert \sin\theta$	$\lvert\vec{W}\rvert^2 = \lvert\vec{U}\rvert^2 \lvert\vec{V}\rvert^2 \lvert\vec{S}\rvert^2 - \lvert\vec{U}\rvert^2 (\vec{V} \cdot \vec{S})^2 - \lvert\vec{V}\rvert^2 (\vec{S} \cdot \vec{U})^2$ $- \lvert\vec{S}\rvert^2 (\vec{U} \cdot \vec{V})^2 + 2(\vec{U} \cdot \vec{S})(\vec{V} \cdot \vec{U})(\vec{S} \cdot \vec{V})$
$U^i(\varepsilon_{ij} V^j) = V^i(\varepsilon_{ij} U^j)$	$U^i(\varepsilon_{ijk} V^j W^k) = V^i(\varepsilon_{ijk} W^j U^k) = W^i(\varepsilon_{ijk} U^j V^k)$	$U^i(\varepsilon_{ijkl} V^j W^k S^l) = V^i(\varepsilon_{ijkl} W^j S^k U^l) = W^i(\varepsilon_{ijkl} S^j U^k V^l)$ $= S^i(\varepsilon_{ijkl} U^j V^k W^l)$

Curl (53)

$n = 2$	$n = 3$	$n = 4$
	$V^i = \varepsilon^{ijk}\nabla_j U_k$ $V_i = \varepsilon_{ijk}\nabla^j U^k$ $\vec{V} = \varepsilon^{ijk}\nabla_j U_k \vec{Z}_i = \varepsilon_{ijk}\nabla^j U^k \vec{Z}^i$	
	$V^i = \varepsilon^{ijk}\frac{\partial U_k}{\partial Z^j}$	

Integration (54)

$n = 2$	$n = 3$	$n = 4$
$d\Omega = \sqrt{Z}\, dZ^1 dZ^2$	$d\Omega = \sqrt{Z}\, dZ^1 dZ^2 dZ^3$	$d\Omega = \sqrt{Z}\, dZ^1 dZ^2 dZ^3 dZ^4$
$\int_\Omega f\, d\Omega = \iint_\Omega f(Z)\sqrt{Z}\, dZ^1 dZ^2$	$\int_\Omega f\, d\Omega = \iiint_\Omega f(Z)\sqrt{Z}\, dZ^1 dZ^2 dZ^3$	$\int_\Omega f\, d\Omega = \int \iiint_\Omega f(Z)\sqrt{Z}\, dZ^1 dZ^2 dZ^3\, dZ^4$