Compute the Lie algebra components of $\hat{Y}_{(123)}$

The Lie algebra components are
$[b_1, [b_2, b_3]]$, $[b_2, [b_1, b_3]]$, $[b_3, [b_1, b_2]]$.
We compute the coefficients multiplying each component. The coefficients are indexed in the above order, and the index is called x below. We are only interested in the 1-from components with $\beta = 0, 1$.

In[2]:=
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(* Run the script in the current working directory *)
Get["prin_symb.m"]
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Out[2]//TableForm=

x	beta+1	Y_{(123)}
1	1	$-\frac{6}{s} + 0[s]^1$
1	2	$-\frac{6}{s} + 0[s]^1$
2	1	$\frac{6}{s} + \frac{3-3\sqrt{1-r^2}}{r} + 0[s]^1$
2	2	$\frac{6}{s} + \frac{3-3\sqrt{1-r^2}}{r} + 0[s]^1$
3	1	$-\frac{6}{s} + \frac{3-3\sqrt{1-r^2}}{r} + 0[s]^1$
3	2	$-\frac{6}{s} + \frac{3-3\sqrt{1-r^2}}{r} + 0[s]^1$