**Tensor Expressions of Algebraic Expressions of Derivatives**

Expressions of Derivatives v2 derives all of the expressions. Then there was a rationale applied to the order of the indices. To ensure they get implemented correctly, the final expressions are each being rewritten here.

Denote weightings as *w*layer-to-from.

All other data structures have one calculated quantity per residual, so there is an implicit “-residual” on all data structures other than w.

Denote the output of a node as *y*layer­-node.

Denote the argument going into a node as *x*layer-node.

For n > j,

For n = j,

For n < j,

With these substitutions,