

2023-06-03 Now for a plane * point

$$(plane.e0 + plane.e1 + plane.e2 + plane.e3) \\ \times (point.e032 + point.e013 + point.e021 + point.e123)$$

$$= (plane.e0)(point.e123) e0123 \\ + (plane.e1)(point.e032) e0123 + (plane.e1)(point.e013) (-e03) \\ + (plane.e1)(point.e021) e02 + (plane.e1)(point.e123) e23 \\ + (plane.e2)(point.e032) e03 + (plane.e2)(point.e013) e0123 \\ + (plane.e2)(point.e021) (-e01) + (plane.e2)(point.e123) e31 \\ + (plane.e3)(point.e032) (-e02) + (plane.e3)(point.e013) e01 \\ + (plane.e3)(point.e021) e0123 + (plane.e3)(point.e123) e12$$

Group em up:

(w)	0
$(e23)$	$(plane.e1)(point.e123)$
$(e31)$	$(plane.e2)(point.e123)$
$(e12)$	$(plane.e3)(point.e123)$
$(e01)$	$(plane.e3)(point.e013) - (plane.e2)(point.e021)$
$(e02)$	$(plane.e1)(point.e021) - (plane.e3)(point.e032)$
$(e03)$	$(plane.e2)(point.e032) - (plane.e1)(point.e013)$
$(e0123)$	$(plane.e0)(point.e123) + (plane.e1)(point.e032) \\ + (plane.e2)(point.e013) + (plane.e3)(point.e021)$