

i) Write the given equation two

$$\begin{aligned}
 (L_V(\omega_1 \wedge \omega_2))(X, Y) &= (L_V \omega_1 \wedge \omega_2)(X, Y) \\
 &+ (\omega_1 \wedge L_V \omega_2)(X, Y) \\
 &= \langle X, L_V \omega_1 \rangle \langle Y, \omega_2 \rangle - \langle Y, L_V \omega_1 \rangle \langle X, \omega_2 \rangle \\
 &+ \langle X, \omega_1 \rangle \langle Y, L_V \omega_2 \rangle - \langle Y, \omega_1 \rangle \langle X, L_V \omega_2 \rangle \\
 &= (V \langle X, \omega_1 \rangle - \langle L_V X, \omega_1 \rangle) \langle Y, \omega_2 \rangle \\
 &- (V \langle Y, \omega_1 \rangle - \langle L_V Y, \omega_1 \rangle) \langle X, \omega_2 \rangle \\
 &+ \langle X, \omega_1 \rangle (V \langle Y, \omega_2 \rangle - \langle L_V Y, \omega_2 \rangle) \\
 &- \langle Y, \omega_1 \rangle (V \langle X, \omega_2 \rangle - \langle L_V X, \omega_2 \rangle)
 \end{aligned}$$

$$\begin{aligned}
 &= (V \langle X, \omega_1 \rangle) \langle Y, \omega_2 \rangle - (V \langle Y, \omega_1 \rangle) \langle X, \omega_2 \rangle \\
 &+ (V \langle Y, \omega_2 \rangle) \langle X, \omega_1 \rangle - (V \langle X, \omega_2 \rangle) \langle Y, \omega_1 \rangle \\
 &- \langle L_V X, \omega_1 \rangle \langle Y, \omega_2 \rangle + \langle L_V Y, \omega_1 \rangle \langle X, \omega_2 \rangle \\
 &- \langle X, \omega_1 \rangle \langle L_V Y, \omega_2 \rangle + \langle Y, \omega_1 \rangle \langle L_V X, \omega_2 \rangle
 \end{aligned}$$

$$\begin{aligned}
 &(V \langle X, \omega_1 \rangle) \langle Y, \omega_2 \rangle + \langle X, \omega_1 \rangle (V \langle Y, \omega_2 \rangle) \\
 &- (V \langle Y, \omega_1 \rangle) \langle X, \omega_2 \rangle - \langle Y, \omega_1 \rangle (V \langle X, \omega_2 \rangle) \\
 &- (\omega_1 \wedge \omega_2)(L_V X, Y) - \omega_1 \wedge \omega_2(X, L_V Y)
 \end{aligned}$$

$$\begin{aligned}
 &= L_V(\omega_1 \wedge \omega_2)(X, Y) - (\omega_1 \wedge \omega_2)(L_V X, Y) \\
 &- (\omega_1 \wedge \omega_2)(X, L_V Y)
 \end{aligned}$$

$$\begin{aligned}
 \text{ii) } V \lrcorner (\chi_1 \wedge \chi_2)(X) &= (b_1 \omega_1 \wedge b_2 \omega_2)(V, X) \\
 &= \langle V, b_1 \omega_1 \rangle \langle X, b_2 \omega_2 \rangle - \langle X, b_1 \omega_1 \rangle \langle V, b_2 \omega_2 \rangle \\
 &= ((V \lrcorner \chi_1) \wedge \chi_2)(X) - \langle X, b_1 \omega_1 \rangle (V \lrcorner \chi_2) \\
 &= ((V \lrcorner \chi_1) \wedge \chi_2)(X) - (\chi_1 \wedge (V \lrcorner \chi_2))(X) \\
 &= (V \lrcorner \chi_1) \wedge \chi_2 - \chi_1 \wedge (V \lrcorner \chi_2)
 \end{aligned}$$

Since X is arbitrary.

$$\begin{aligned}
 \text{iii) } (L_V(f \omega_1))(X) &= \langle X, L_V(f \omega_1) \rangle \\
 &= V \langle X, f \omega_1 \rangle - \langle L_V X, f \omega_1 \rangle \\
 &= V(f \langle X, \omega_1 \rangle) - f \langle L_V X, \omega_1 \rangle
 \end{aligned}$$

Since $\langle \rangle$ bilinear