

W:

$$\begin{aligned}
 L_w &= \bigcap_{N(v_0)} = \bigcap_{\{u_0, u_1, u_2, u_4, u_5, u_6, u_7\}} = \{u_0, u_1, u_2, u_4, u_5, u_6, u_7\} \\
 N_w(v_1) &= \bigcap_{N(v_1)} = \bigcap_{\{u_0, u_1, u_2, u_3\}} = \{u_0, u_1, u_2\} \\
 N_w(v_2) &= \bigcap_{N(v_2)} = \bigcap_{\{u_0, u_1, u_3, u_4, u_5, u_6, u_7, u_8\}} = \{u_0, u_1, u_4, u_5, u_6, u_7\} \\
 N_w(v_3) &= \bigcap_{N(v_3)} = \bigcap_{\{u_0, u_3, u_4, u_5, u_6, u_8, u_9\}} = \{u_0, u_4, u_5, u_6\}
 \end{aligned}$$

$v_1$

X:

$$\begin{aligned}
 L_x &= \bigcap_{N(v_1)} = \bigcap_{\{u_0, u_1, u_2, \cancel{u_3}\}} = L_w \cap N_w(v_1) = \{u_0, u_1, u_2\} \\
 N_x(v_2) &= \bigcap_{N(v_2)} = \bigcap_{\{u_0, \cancel{u_1}, \cancel{u_3}, u_4, u_5, u_6, u_7, \cancel{u_8}\}} = L_x \cap N_w(v_2) = \{u_0, u_1\} \\
 N_x(v_3) &= \bigcap_{N(v_3)} = \bigcap_{\{u_0, \cancel{u_3}, u_4, u_5, u_6, \cancel{u_8}, \cancel{u_9}\}} = L_x \cap N_w(v_2) = \{u_0\}
 \end{aligned}$$