Cheatsheet

- Neighborhoods for a single Vertex

$$N_1(v) = \{u \in N(v) : N(u) \setminus (N(v) \cup \{v\}) \neq \emptyset\}$$
$$N_2(v) = \{u \in N(v) \setminus N_1(v) : N(u) \cap N_1(v) \neq \emptyset\}$$
$$N_3(v) = N(v) \setminus (N_1(v) \cup N_2(v))$$

For $i, j \in [1, 3]$, we denote $N_{i,j}(v) = N_i(v) \cup N_j(v)$

- Neighborhoods for a two Vertices

$$N_1(v, w) = \{u \in N(v, w) \mid N(u) \setminus (N(v, w) \cup \{v, w\}) \neq \emptyset\}$$
$$N_2(v, w) = \{u \in N(v, w) \setminus N_1(v, w) \mid N(u) \cap N_1(v, w) \neq \emptyset\}$$
$$N_3(v, w) = N(v, w) \setminus (N_1(v, w) \cup N_2(v, w)).$$

For $i, j \in [1, 3]$, we denote $N_{i,j}(v, w) = N_i(v, w) \cup N_j(v, w)$.

- Definition for Reduction Rule 2

$$D = \{\tilde{D} \subseteq N_{2,3}(v, w) \mid N_3(v, w) \subseteq \textstyle\bigcup_{v \in \tilde{D}} N(v),\ |\tilde{D}| \leq 3\},$$
$$D_v = \{\tilde{D} \subseteq N_{2,3}(v, w) \cup \{v\} \mid N_3(v, w) \subseteq \textstyle\bigcup_{v \in \tilde{D}} N(v),\ |\tilde{D}| \leq 3,\ v \in \tilde{D}\}$$
$$D_w = \{\tilde{D} \subseteq N_{2,3}(v, w) \cup \{w\} \mid N_3(v, w) \subseteq \textstyle\bigcup_{v \in \tilde{D}} N(v),\ |\tilde{D}| \leq 3,\ w \in \tilde{D}\}.$$

$\bigcup = \bigcup_{D \in} D$ and $\bigcup = \bigcup_{D \in} D$