\[ L = \{ w # x # y z \mid w \in \{a, b\}^* \land |w| = 1 \cdot |y| \land |x| = 1 \cdot |z| \} \]

Tandem - Pumping Recipe:

1. Assume \( L \text{ context-free} \rightarrow \text{tandem-pumpable} \)
2. Choose \( w = (a^p \#)^3 a^p \)
3. Consider all splits \( w = uvxyz 5.1 \)
   - \( |vxy| \geq 1 \)
   - \( |vxy| \leq p \)
   \[ \implies u^i v^i x^i y^i z \in L \quad \forall i \geq 0 \]
4. Note
   \[ aaaa...a\#aa...aa \#aa...aa \#aa...aa \]

   1. \( u \) and \( y \) cannot contain \( \# \),
      because otherwise \( uxz \notin L \).

   2. \( vxy \) can only contain symbols of
      neighboring "parts" of the word.
      \[ |vy| \geq 1 \text{ and } \# \notin vy \]
      \[ \implies vy \in a^+ \]
      If we remove any \( a \)'s from (at most
      two neighboring parts of) the word (i.e. \( uxz \))
      we obtain a word \( uxz \notin L \).

5. \( L \) is not context-free.