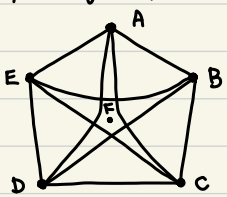
QUIZ 5

Recall the given sets of points & lines:

$$\text{points} = X = \{A, B, C, D, E\}$$

$$\text{lines} = L = \left\{ \begin{matrix} \{A,B\}, \{B,C\}, \{C,D\}, \{D,E\}, \{E,A\} \\ \{A,F,C\}, \{A,F,D\}, \{B,F,D\}, \{B,F,E\}, \{C,F,E\} \end{matrix} \right\}$$

loosely, the "geometry" looks like:



1 I1. $A, F \in \{A,F,C\}$ and $A, F \in \{A,F,D\}$ but $\{A,F,C\} \neq \{A,F,D\}$.

I2. By inspection, lines contain 2 or 3 points ≥ 2.

I3. A, B, C are not all on the same line.

2a. B1. The given relations all come in "symmetric pairs".

B2. A, B are both on $\{A,B\}$ but there is no other line containing A and B.

B3. F is the only point in between others.

2b. Choose 3 pts: There are cases:

- One of the 3 pts is F: 1. A, B, F ∴ or ~~X~~ A, C, F ∴ (collinear)
- None of the 3 pts is F: 3. A, B, C ∴ or 4. A, D, C. ∴

1. There is no pt P s.t. $A * P * B$ or $A * P * F$ or $B * P * F$. vacuous ✓

3. The only line one can take is $\ell = \{D, E\}$. Then, ℓ contains no pt between A, B or A, C or B, C. vacuous ✓

4. The only line one can take is $\ell = \{B, F, E\}$. Thus, ℓ contains F which satisfies $A * F * C$ and $A * F * D$. Thus, it verifies the statement.

⇒ B4 is true!