

Math 130 Worksheet 3: Betweenness

1. Draw a schematic picture to represent each of the following betweenness axioms

B1. If $A * B * C$, then $A, B,$ and C lie on a line, and also $C * B * A$

B2. For any distinct points $A, B,$ there exists C such that $A * B * C$

B3. Given A, B, C distinct points on a line, exactly one is between the other two.

B4. (Pasch's axiom, 1882)

Let A, B, C be three points that do not lie on a line, and let L be a line which does not meet any of the points A, B, C . If L contains a point between A and B , then it also contains a point between A and C or between B and C , but not both.

2. What is the notion of “betweenness” that you usually think of on the Cartesian plane \mathbb{R}^2 ?

3. Compare your notion with that of the person beside you – do you agree?