

Reading Quiz Section 6.1

1. Let A and B be sets. Let $(a, b), (c, d) \in A \times B$. Then $(a, b) = (c, d)$ if and only if
 - (a) $a = c$
 - (b) $b = d$
 - (c) $ad = bc$
 - (d) $a = c$ and $b = d$
2. True or False: $A \times B = \emptyset$ if and only if $A = B = \emptyset$.
3. Fill in the blank: If A and B are both finite nonempty sets, then $\max(|A|, |B|)$ _____ $|A \times B|$.
 - (a) $=$
 - (b) \geq
 - (c) \leq
 - (d) \neq

Practice Problems Section 6.1

1. Let A, B, C, D be sets. Prove

$$(A \times B) \cap (C \times D) = (A \cap C) \times (B \cap D).$$

Video Solution

2. Let A and B be nonempty sets. Define a function $\pi_1 : A \times B \rightarrow A$ by $\pi_1(a, b) = a$. Show π_1 is surjective. Under what conditions is it a *bijection*?

Video Solution