

Section 5 - Counterexamples

To disprove an if-then statement, we need only find one example for which the hypothesis (the if part) is true, but the conclusion (the then part) is false.

Ex: disprove: If x is even, then $x > 12$.

Ans: The statement is false because $x = 2$ provides a counterexample.

Ex: disprove: If q is a rational number then $\frac{1}{q}$ is rational.

Ans: The statement is false because $q = 0$ provides a counterexample.

To find hard-to-see counterexamples: try using the atypical numbers (0, 2, negatives, etc.) or try to prove it and see where the logic breaks down.

Homework: Section 5, P. 27 #1-4,6,7,9