

Reading Questions 3

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1. To prove that the statement P is false by showing that the negation of P is true is a proof by contradiction.
2. Consider the statement: "If the average of four different integers is 10 then one of the integers is greater than 11". This statement was proved using proof by contradiction.
3. Were there any explanations since the previous class which were unclear?

Section 0.2 Proofs in Mathematics (Part 2)

Proof by Contrapositive

- P 1.** When should proof by contrapositive be used to prove a statement?
- P 2.** Prove: If $x^2 - 6x + 5$ is even then x is odd.

Proof by Contradiction and Counter Example

- P 3.** When using proof by contradiction what is being contradicted?
- P 4.** Prove: No odd integer can be expressed as the sum of three even integers.
- P 5.** When is finding a counter example useful?
- P 6.** Prove or Disprove: For all positive integers x , if $\frac{x(x+1)}{2}$ is odd then $\frac{(x+1)(x+2)}{2}$ is odd.