Math 135 - Lecture 1 8/27/2012 Note Title Announcements

Dh: A proposition is a declarative statement which is either true or false, but not both. Ex: This is math 135. I am a teacher. Ambiguous: Spiders are creepy.

Math is hard.

Vegation Let p be a proposition. The negation of p, written 7p is the Statement: "It is not the case that p." Ex: P="The sky is yellow." 7p = "The sky is not yellow." Note: English gives many ways to word-just be careful!

Conjunction + Disjunction

(ie "and" and "or")

Conjunction: "P and 9", written P 19,

Is frue P exactly when both?

P and 9 are (b)oth true

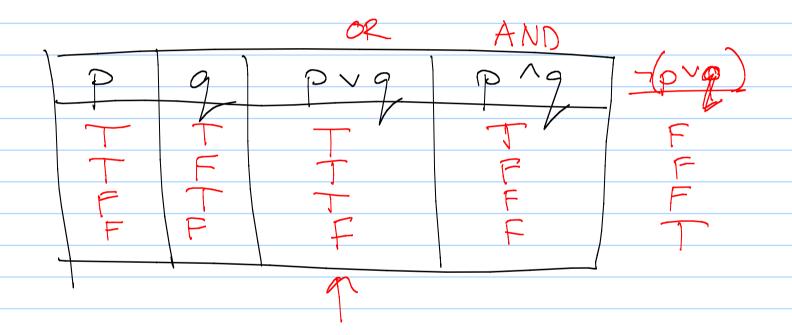
(and 1st false otherwise)

Disjunction: "P or 9" written propriet

True if either of p,9 ist true,

or if both are true

Truth Tables



Exclusive or: P&g

True when exactly one of

P,g is true (but not both) PP

16 **(** \ progressfalse when presture and it vis frue otherwise)

Examples to pender:

I "If today is Friday, then 2+5=7."

True! F Triday, then 2+1=4."

P F True!

Converse, Inverse & Contrapositive

Consider P = 9.

The converse is 9 -> p.

The inverse is 7p -> 79.

The contrapositive is 79 -> 7p.

Ex: p-39
The number 15 is prime then
thas no divisors

F(p) = 15 is prime
F g = 15 had no divisors, 9 p: IF 15 has no divisors, then
15 is prime
15 prime
15 has divisors.
19 prime
15 has divisors,
19 prime.

Ex: Truth Tables!

Logical Equivalence

Propositions that have the same mith values (in whole muth table) are Called logically equivalent.

(written P = 9)

Ex: