Math 174 Fall 1998 Exam 2

PRINT Your Name:______________________________

There are 10 problems on 4 pages. Each problem is worth 10 points.

$\boxed{CIRCLE}$ your answers.

1. True or False. If true, **prove** it. If false, then give a **counterexample**. A necessary condition for an integer to be divisible by 6 is that it be divisible by 2.

(p is a necessary condition for q) $\equiv (q \to p)$

In this problem p = the integer is divisible by 2

q = the integer is divisible by 6

so the problem asks:

T/F $\quad 6|n \Rightarrow 2|n$

This is True

If $6|n$, then $n = 6k$ for some integer k. Thus

$n = 2 \cdot 3k$ Thus $2|n$.

2. True or False. If true, **prove** it. If false, then give a **counterexample**. The sum of any two irrational numbers is irrational.

False $\quad \sqrt{2}$ is irrational $-\sqrt{2}$ is irrational

but $\sqrt{2} + (-\sqrt{2}) = 0$ which is rational.