I. **Simplify** \( \frac{\frac{1}{x} - \frac{1}{y}}{\frac{y}{x} - \frac{x}{y}} \) = ...

**Solved**

\[
\frac{y}{xy} - \frac{x}{xy} = \frac{y-x}{xy} \\
\frac{y^2}{xy} - \frac{x^2}{xy} = \frac{y^2-x^2}{xy} = \frac{y-x}{y^2-x^2}
\]

\[
= \frac{(y-x)}{(y+x)(y-x)} = \frac{1}{y+x}
\]

II. **Logic.**

A. **Theorem:**

A statement, many times in the form:

If A, then B.

B. **Converse:**

If B, then A.

C. **Major Caution:** A theorem and its converse are not logically equivalent, i.e., they do not necessarily mean the same thing.

D. If \( x = 2 \), then \( x^2 = 4 \). (T) \( p^3 \)

But the converse:

If \( x^2 = 4 \), then \( x = 2 \). (F)
E. Defs

1. Statement - A declarative sentence which is either T or F. (Not both at the same time).

2. Open sentences.
   - He is 6 ft. 9 in. tall.
   - \( x^2 + 5x + 6 = 0 \)
   - \((x+3)(x+2) = 0\)
     - \(\{x \leq -3, -2\}\)

   Recall
   - **Principle:** Zero Product Property
   - If \(AB = 0\), then either \(A = 0\) or \(B = 0\).

F. We went over the problems on pp 6-7 of the LOGIC SUPPLEMENT.

☆. For tomorrow read & do pp 8-11 in LOGIC.

H. (Study guide for Test #1).
   - I'll post a STUDY GUIDE for Test #1 in the near future!