Announcement

I will add 10 points (out of 100) to your Midterm 1 grades.

Any student who made more than 90 on Midterm 1 will have the “spillover” points credited to Midterm 2. Thus, if you made 100 on Midterm 1, you will start Midterm 2 with 10 extra points.

If I curve Midterm 2, the spillover will go to the Final.
T1: \( \text{rev} \ (\text{app} \ x \ y)) = (\text{app} \ (\text{rev} \ y) \ (\text{rev} \ x)) \)

T2: \( (\text{true-listp} \ (\text{app} \ x \ y)) \iff (\text{true-listp} \ y) \)

T3: \( (\text{true-listp} \ x) \rightarrow (\text{rev} \ (\text{rev} \ x)) = x \)
In some of your classes, professors will say something like: “‘Let $S$ be the set of all sequences. If $x$ and $y$ are sequences then $x \diamond y$ denotes the concatenation of $x$ followed by $y$, and $\overline{x}$ denotes the reverse of $x$.”

Implicitly, a sequence is a true-listp; “$x \in S$” means “$x$ is an element of the set $S$” or “(true-listp $x$).”
\[ T1: \overline{x \diamond y} = \overline{y \diamond x}. \]

\[ T2: (x \diamond y) \in S \iff (y \in S) \]

\[ T3: x \in S \rightarrow \overline{x} = x \]

However it is written, you should understand the logical meaning of these sentences to be:
T1: \( \text{(rev (app x y)) = (app (rev y) (rev x))} \)

T2: \( \text{(true-listp (app x y))} \leftrightarrow \text{(true-listp y)} \)

T3: \( \text{(true-listp x)} \rightarrow \text{(rev (rev x)) = x} \)
About a Quiz 3/2 Question

In class on Tuesday I asked whether

Theorem:
(f (g x nil)) = (f x)

could be used to rewrite

((p a) ∧ (q b)) → (p (f (g a b)))

at the underlined place.
About a Quiz Question

This question could have been phrased: Can Theorem:

\[(f (g \ x \ nil)) = (f \ x)\]

be factored so that the pattern matches the underlined term below?

\[((p \ a) \land (q \ b)) \rightarrow (p \ (f \ (g \ a \ b)))\]
Note that if you chose the pattern to be

Theorem:
\[(f \ (g \ x \ \text{nil})) = (f \ x)\]

then it will not match \((f \ (g \ a \ b))\).

Reason: There is no \(\sigma\) such that \((f \ (g \ x \ \text{nil})) / \sigma = (f \ (g \ a \ b))\).
About the Rewrite Rule of Inference

In class today, we spent most of our time dissecting the Rewrite Rule of Inference.

The examples I worked in class are not in the book.

But similar examples are in Sections 4.6.1 (pg 121) and 4.6.3 (page 126).
But Remember...

I want you to be able to use previously proved theorems to rewrite (simplify) new conjectures. I want you to be able to do that without making logical mistakes!

But I don’t care if you can say what is “π”, what is “ψₕ”, “(ψₕ → (φₕ/σ))”, etc. Just learn how to do it right and you’ll be fine.