NP-Completeness of 3CNF-SAT and 3-coloring.

In today's lecture, we will discuss the strategy for proving new problems NP-complete. (See lecture notes from last class.) We will show that CIRCUIT-SAT $\leq_p$ 3CNF-SAT, thus showing that 3CNF-SAT is NP-complete. (We already showed 3CNF-SAT $\in$ NP.) This reduction is described on page 471 of the book.

We will also introduce a problem called 3-coloring. It will be easily seen to be in NP. We
will show that $3CNF\text{-SAT} \leq_p 3\text{-coloring}$, thus establishing that $3\text{-coloring}$ is NP-complete. These reductions are

This is from Section 8.7 of the book.

All of this is covered quite succinctly in the book, so lecture notes for this class are omitted.