1 Prime equation numbers

First an equation.

\[ A = B \] \hspace{1cm} (1.1)

That was equation (1.1).

Then the same, with a prime on the number.

\[ C = D \] \hspace{1cm} (1.1')

And that was equation (1.1').

Notice, by the way, that when a \texttt{\ref} occurs inside a \texttt{\tag}, and that \texttt{\tag} is then \texttt{\label}'d, a \texttt{\ref} for the second \texttt{\label} requires \textit{three} runs of \LaTeX in order to get the proper value. (If you run through the logic of \LaTeX's cross-referencing mechanisms as they apply in this case, you will see that this is necessary.)

2 Subnumbered equations

Here is a, b, c sub-numbering.

\[ A = B \] \hspace{1cm} (2.1a)
\[ D = C \] \hspace{1cm} (2.1b)
\[ E = F \] \hspace{1cm} (2.1c)

That was produced with the \texttt{eqnarray} environment; the middle line was labeled as (2.1b).

An equation following the end of the \texttt{subequations} environment should revert to normal numbering:

\[ H < K \] \hspace{1cm} (2.2)

A check on the labeling: that was equation (2.2).

The sub-numbered equations can be spread out through the text, like this:

\[ A = B \] \hspace{1cm} (2.3a)

The \texttt{subequations} environment can span arbitrary text between subsidiary equations. The only restriction is that if there are any numbered equations inside the \texttt{subequations} environment that break out of the subequation numbering sequence, they would have to be handled specially.

\[ D = C \] \hspace{1cm} (2.3b)

More arbitrary text.

\[ E = F \] \hspace{1cm} (2.3c)
Label check: the middle one was (2.3b)
A final equation for a numbering check.
\[ G = H \] \hspace{1cm} (2.4)

That equation was labeled as (2.4).

3 Tests of align, gather, and other AMS-\LaTeX{} environments

The \texttt{align} environment:

\begin{align}
A + B & = B + A \tag{3.1a} \\
C & = D + E \tag{3.1b} \\
E & = F \tag{3.1c}
\end{align}

Label check: that was (3.1a), (3.1b), and (3.1c).

The \texttt{align} environment again:

\begin{align}
A + B & = B \tag{3.2a} \\
C & = D + E \tag{3.2b} \\
E & = F \tag{3.2c}
\end{align}

Label check: that was (3.2a), (3.2b), and (3.2c).

The \texttt{gather} environment. For the third line we refer to one of the numbers in the first \texttt{align} structure.

\begin{align}
A + B & = B \tag{3.3a} \\
C & = D + E \tag{3.3b} \\
E & = F \tag{3.1c'}
\end{align}

Label check: that was (3.3a), (3.3b), and (3.1c').

The next \texttt{subequations} environment encompasses two separate equations.

A \texttt{split} environment:

\begin{align}
A = B + C + F \\
= G \tag{3.4a}
\end{align}

and a \texttt{multiline} environment:

\begin{align}
\end{align}

Label check: That was (3.4a) and (3.4b).