1 Prime equation numbers

First an equation.

\[ A = B \] (1.1)

That was equation (1.1).

Then the same, with a prime on the number.

\[ C = D \] (1.1')

And that was equation (1.1').

Notice, by the way, that when a \ref occurs inside a \tag, and that \tag is then \label'd, a \ref for the second \label requires 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.

\[ A = B \] (2.1a)
\[ D = C \] (2.1b)
\[ E = F \] (2.1c)

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

An equation following the end of the subequations environment should revert to normal numbering:

\[ H < K \] (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:

\[ A = B \] (2.3a)

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

\[ D = C \] (2.3b)

More arbitrary text.

\[ E = F \] (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 \texttt{align}, \texttt{gather}, and other AMS-\LaTeX\ environments

The \texttt{align} environment:

\[
\begin{align}
A + B & = B + A \\
C & = D + E \\
E & = F
\end{align}
\]  \hspace{1cm} (3.1a)

\[
\begin{align}
C & = D + E \\
E & = F
\end{align}
\]  \hspace{1cm} (3.1b)

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

The \texttt{align} environment again:

\[
\begin{align}
A + B & = B & B & = B + A \\
C & = D + E & C \oplus D & = E \\
E & = F & E' & = F'
\end{align}
\]  \hspace{1cm} (3.2a)

\[
\begin{align}
C & = D + E \\
E & = F
\end{align}
\]  \hspace{1cm} (3.2b)

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.

\[
\begin{align}
A + B & = B \\
C & = D + E \\
E & = F
\end{align}
\]  \hspace{1cm} (3.3a)

\[
\begin{align}
C & = D + E \\
E & = F
\end{align}
\]  \hspace{1cm} (3.3b)

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

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

\[
\begin{align}
A = B + C + F \\
& = G
\end{align}
\]  \hspace{1cm} (3.4a)

and a \texttt{multline} environment:

\[
\begin{multline}
\end{multline}
\]  \hspace{1cm} (3.4b)

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