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 the second \texttt{label} requires \texttt{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-LAT\(\text{E}\)X environments

The \texttt{align} environment:

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

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

The \texttt{align} environment again:

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

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.

\[ \begin{align*}
A + B &= B \hspace{1cm} (3.3a) \\
C &= D + E \hspace{1cm} (3.3b) \\
E &= F \hspace{1cm} (3.1c')
\end{align*} \]

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

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

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

and a \texttt{multiline} environment:

\[
\begin{align*}
\end{align*}
\]

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