

Sometimes a QED box is used outside the scope of a proof, and sometimes the box follows a display. `\qedhere` works only within the scope of a proof, and only with an `amsmath` environment, not within a display using `$$`. Sometimes other symbols, such as a lozenge (\diamond), are used (mainly in books) to mark the end of a remark or definition, so that there is no confusion if it ends at a page break.

Proof. The proof of the theorem. □

Proof. This is now proved by
$$a + b = c$$
 □

Outside of a proof, `\qed` works at the end of a text line. □

Remark. A slight redefinition of `\qed` — `\xqed` — can be made to accept any symbol to be placed at the end of a line of text outside of a proof. ◇

To get a box or other symbol at the right margin following a display, there is a hack that will work even with `$$\dots$`.

$d + e = f$ ◇

This approach can be implemented as a command `\xqedhere` that accepts two arguments: a distance measured from the end of the line to the right margin, and a symbol. It requires careful measuring of the distance, and it may be necessary to experiment with this distance.

Proof. With `\qedhere`, a QED box is positioned on the common baseline of a multi-line expression such as a case statement:

$$x + y = \begin{cases} -1 & \text{if } x < 2, \\ 0 & \text{if } x = 2, \\ 1 & \text{if } x > 2. \end{cases} \quad \square$$

Proof. This display uses `\xqedhere` to manually place the box on the last line of the display:

$$x + y = \begin{cases} -1 & \text{if } x < 2, \\ 0 & \text{if } x = 2, \\ 1 & \text{if } x > 2. \end{cases} \quad \square$$

Measuring hints

To aid in measuring the space between the end of a line and the right margin, bracket the display under consideration with two trivial “proofs”, after inserting an approximate distance with `\xqedhere`. Print the sheet after processing, and draw a line joining the outside edges of the correctly placed boxes. This will provide a reliable guide for measuring the distance to be adjusted.

Proof. Establish right margin. □

Adjust this:

$$g + h = k$$

□

Proof. Establish right margin.

□

```
\documentclass{article}
\usepackage{amsmath,amsthm,amssymb}
\usepackage{verbatim}
\nofiles

\newcommand{\xqedhere}[2]{%
  \rlap{\hbox to#1{\hfil\llap{\ensuremath{#2}}}}}

\newcommand{\xqed}[1]{%
  \leavevmode\unskip\penalty9999 \hbox{}\nobreak\hfill
  \quad\hbox{\ensuremath{#1}}}

\theoremstyle{remark}
\newtheorem*{remark}{Remark}

\begin{document}
Sometimes a \textsc{qed} box is used outside the scope of a proof, and
sometimes the box follows a display. \verb+\qedhere+ works only within
the scope of a proof, and only with an amsmath environment, not within
a display using \verb+$$+. Sometimes other symbols, such as a lozenge
($\lozenge$), are used (mainly in books) to mark the end of a remark
or definition, so that there is no confusion if it ends at a page break.

\begin{proof}
The proof of the theorem.
\end{proof}

\begin{proof}
This is now proved by
\begin{equation*}
a + b = c \xqedhere
\end{equation*}
\end{proof}

Outside of a proof, \verb+\qed+ works at the end of a text line.
\xqed
```

```

\begin{remark}
A slight redefinition of \verb+\qed+ --- \verb+\xqed+ --- can be made
to accept any symbol to be placed at the end of a line of text outside
of a proof.\xqed{\lozenge}
\end{remark}

```

To get a box or other symbol at the right margin following a display, there is a hack that will work even with `\verb+$$...$$+`.

```

$$
d + e = f \xqedhere{5.3cm}{\lozenge}
$$

```

This approach can be implemented as a command `\verb+\xqedhere+` that accepts two arguments: a distance measured from the end of the line to the right margin, and a symbol. It requires careful measuring of the distance, and it may be necessary to experiment with this distance.

```

\begin{proof}
With \verb+\qedhere+, a \textsc{qed} box is positioned on the common
baseline of a multi-line expression such as a case statement:
\begin{equation*}
x + y = \begin{cases}
-1 & \text{if } x < 2, \\
0 & \text{if } x = 2, \\
1 & \text{if } x > 2.
\end{cases} \qedhere
\end{equation*}
\end{proof}

```

```

\begin{proof}
This display uses \verb+\xqedhere+ to manually place the box on the
last line of the display:
\begin{equation*}
x + y = \begin{cases}
-1 & \text{if } x < 2, \\
0 & \text{if } x = 2, \\
1 & \text{if } x > 2.
\end{cases} \xqedhere{118.5pt}{\qed}
\end{equation*}
\renewcommand{\qed}{}
\end{proof}

```

```

\subsection*{Measuring hints}

```

To aid in measuring the space between the end of a line and the right margin, bracket the display under consideration with two trivial “proofs”, after inserting an approximate distance with

`\verb+\xqedhere+`. Print the sheet after processing, and draw a line joining the outside edges of the correctly placed boxes. This will provide a reliable guide for measuring the distance to be adjusted.

```
\begin{proof}
Establish right margin.
\end{proof}
```

Adjust this:
\$\$
 $g + h = k$ `\xqedhere{5.5cm}{\qed}`
\$\$

```
\begin{proof}
Establish right margin.
\end{proof}
```

```
\vspace{4\baselineskip}
\verbatiminput{\jobname.tex}
\end{document}
```

%% based on trans21277