A Simple Set of LaTeX Custom Commands

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Here is a sampling of commands I've created in the context of classroom material. They are fairly simple and pretty typical of the kind of commands most users of LaTeX create. Most of them are shortcuts: they make it easier to enter code, read the code, and adjust the formatting of the input.

```
% Taking derivatives
\newcommand{\dd}[2]{\dfrac{d#1}{d#2}}
\newcommand{\dydx}{\dd yx}
\newcommand{\ddx}{\dd {}x}
\newcommand{\ddt}{\dd {}t}

% Taking partial derivatives
\newcommand{\pp}[2]{\frac{\partial#1}{\partial
#2}}
\newcommand{\ppx}{\pp{}x}
\newcommand{\ppy}{\pp{}y}
\newcommand{\ppz}{\pp{}z}

% evaluating anti-derivatives
\newcommand{\eval}{\Big|}

% formatting some important single letters
\newcommand{\e}{\mbox{\large$e$\rule{0in}{1.6ex
}}}
\renewcommand{\epsilon}{\varepsilon}
\renewcommand{\phi}{\varphi}

% Labelling L'Hospital's Rule
\newcommand{\LH}{\stackrel{\text{LH}}{=}}
% Asking if two things are equal
\newcommand{\eq}{\stackrel{\text{?}}{=}}
% making a larger decimal point
\newcommand{\bd}{\mbox{\Large .}}

% For using in integrals, like \int x\dx
\newcommand{\dx}{\,dx}
\newcommand{\dy}{\,dy}
\newcommand{\dz}{\,dz}
\newcommand{\dt}{\,dt}
\newcommand{\du}{\,du}
\newcommand{\dv}{\,dv}
\newcommand{\dtheta}{\,d\theta}

% For specially formatted fractions
\newcommand{\textfrac}[2]{\frac{\text{#1}}{
\text{#2}}}
\newcommand{\change}[2]{\frac{\text{change in
#1}}{\text{change in #2}}}
% Better appearance for a "skinny frac"
% like \frac 1x
\newcommand{\sfrac}[2]{\frac{\ #1\ }{#2}}

% domain, image and identity functions
\newcommand{\dom}{\mathop{\rm dom}\nolimits}
\newcommand{\im}{\mathop{\rm im}\nolimits}
\newcommand{\id}{\mathop{\rm id}\nolimits}

% Real numbers, etc.
\usepackage{amsfonts}
\newcommand{\R}{\mathbb{R}}
\newcommand{\Z}{\mathbb{Z}}
\newcommand{\Q}{\mathbb{Q}}
\newcommand{\C}{\mathbb{C}}

% Script letters: usually for collections
\usepackage{mathrsfs}
\renewcommand{\L} {\mathscr{L}}
\newcommand{\A}   {\mathscr{A}}
\renewcommand{\P} {\mathscr{P}}
\newcommand{\scrC}{\mathscr{C}}

% for "such that"
\newcommand{\st}{:}
% inverse functions
\newcommand{\inv}{^{-1}}
% Making answer blanks
\newcommand{\blank}[1]{\underline{\hspace*{#1}}
}

\usepackage{amssymb}
% stands for "not divides"
\newcommand{\notdiv}{\nmid}

% for labeling parts of proofs
\newcommand{\forwards}{``$\Rightarrow$''}
\newcommand{\contra}{\ensuremath{\Rightarrow
\Leftarrow}}
\newcommand{\backwards}{``$\Leftarrow$''}

% Theorems etc., read amsthdoc.pdf
\usepackage{amsthm}
\newtheorem{theorem}{Theorem}[section]
\newtheorem{prop}[theorem]{Proposition}
\theoremstyle{definition}
\newtheorem{example}[theorem]{Example}
\newtheorem{definition}[theorem]{Definition}
```

Guideline on creating shortcuts:

- Readability is much more important than ease of input (this opinion isn't just mine). Therefore, I recommend not creating `\l` as a shortcut for `\left`, but I do create a shortcut of `\dydx` for `\frac{dy}{dx}`. The former is just a shortcut for inputting but makes readability worse. The latter improves readability and consistency in formatting.
- Use commands to create improvements in formatting. For instance

  `e^{-(x-\mu)^2/\sigma}` produces $e^{-(x-\mu)^2/\sigma}$

  and

  `\e^{-(x-\mu)^2/\sigma}` produces $e^{-(x-\mu)^2/\sigma}$.