

Typeset the text below the line, exactly, using LaTeX and *following the advice given on the second page*:

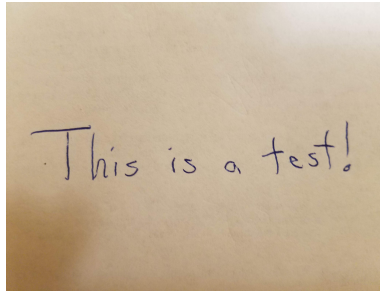
Let $a, b, c \in \mathbb{R}$ with $a \neq 0$. Then the most general solution to the equation $ax^2 + bx + c = 0$ is

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

Here is a derivation of a formula involving the difference of squares:

$$\begin{aligned}(x + y)(x - y) &= x(x - y) + y(x - y) \\ &= x^2 - xy + yx - y^2 \\ &= x^2 - y^2.\end{aligned}$$

Sometimes we will need to include a drawing like this:



We have the following containment of sets: $\emptyset \subset \{1, 2\} \subset \{1, 2, 3\}$.

- » For the quadratic equation, you will need to use the LaTeX commands `\frac{}{}` and `\sqrt{}`. To get the \pm sign, search online for a list of LaTeX mathematical symbols to find the correct code. (The answer to almost any LaTeX question is easily answered with a web search.)
- » The symbol for the real numbers, \mathbb{R} , comes from the code `\mathbb{R}`. Since you are using it so much, you will want to make sure that

```
\newcommand{\R}{\mathbb{R}}
```

appears in the preamble of your document so that you can, instead, just type `\R`.

- » Note how the quadratic equation is inline whereas its solution is displayed. (Here “display” means that that the solution appears on a separate, centered, line.) To display mathematics, enclose your code in `\[` and `\]` instead of `$`-signs.
- » For the displayed difference of squares calculation, do not use `\[` and `\]`. Instead, use the construction

```
\begin{align*}
  blah &= blah \\
        &= blah \\
        &= etc.
\end{align*}
```

Equations are aligned at the `&` and a newline is produced by the `\\`. (You can control the space between the lines with something like this `\\[5pt]`, instead, to add 5 points of space.)

- » You will sometimes want to insert complicated drawings in your files. To do this, you can create the drawing by hand and take a picture or with external software and then include the resulting graphics file. The code I used to get the result on the previous page was

```
\begin{center}
  \includegraphics[height=1.5in]{graphics/test.jpg}
\end{center}
```

(I kept the file `test.jpg` in a folder called “graphics”.) To create complicated drawings in LaTeX, itself, read up on “tikz”.

- » To get the signs `{` and `}`, use the code `\{` and `\}`.