LaTeX, A Short Course
Plotting Graphs with `pgfplots`

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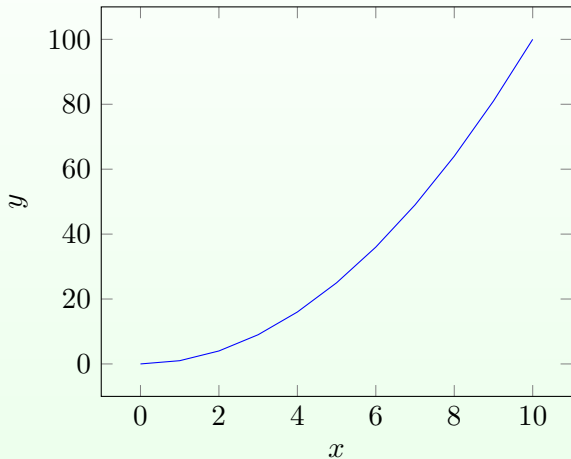The University of Saskatchewan

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- `pgfplots` is a package built on tope of the `tikz` drawing package.

- A graph must appear within a `tikzpicture` environment.

- A plot is made with the `axis` environment.

- Let's start with an example.

```
\usepackage{pgfplots}
\pgfplotsset{compat=1.5}

...

\begin{tikzpicture}
\begin{axis}[
title={Quadratic Function $y=f(x)=x^2$},
xlabel={$x$},
ylabel={$y$},
]
\addplot[blue] table {mydata.dat}
\end{axis}
\end{tikzpicture}
```
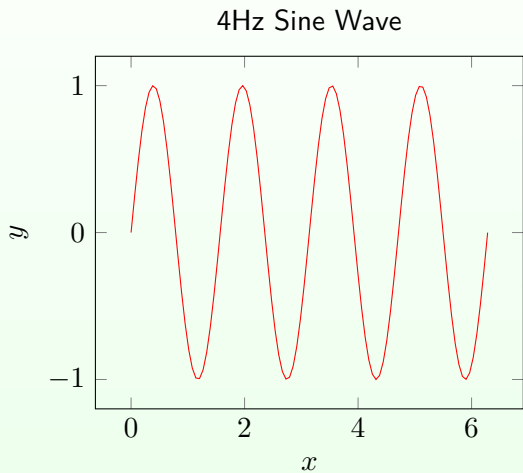
Quadratic Function $y = f(x) = x^2$

Example - Plot a pgfmath expression.

```
\begin{tikzpicture}
\begin{axis}[
title={4Hz Sine Wave},
xlabel={$x$},
ylabel={$y$},
]
\addplot[
red,
domain=0:2*pi,
samples = 100,
]
{ sin(deg(4*x)) };
\end{axis}
\end{tikzpicture}
```

4Hz Sine Wave

Example - Plot a pgfmath expression.

```
\begin{tikzpicture}
\begin{axis}[
ybar,
bar width=20,
title={A Bar Graph},
height=.8\textheight,
symbolic x coords={Dogs,Cats,Birds,Fish},
xtick=data,
]
\addplot[
draw=blue, fill=blue!15,
]
coordinates { (Dogs,15) (Cats,50)
(Birds,95) (Fish,25)   };
\end{axis}
\end{tikzpicture}
```

A Bar Graph