

# L3cture app

We will try our luck again with the L3cture app today.

If you've installed the app, connect to Eduroam wifi with your standard university username and password and start it.

If you haven't got a smartphone, or don't want to take part, that's fine!

# Lecture question

# Images

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- (i) Use software (e.g. a graphics programme) to create an image, then include it as an image file;
- (ii) Use one of  $\LaTeX$ 's packages to create the image directly with simple commands.

We will look at both of these methods.



# Image files

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Different formats suit different purposes.

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JPEG files are used a lot on the web.

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PNG filesizes are usually much bigger than for JPEG.



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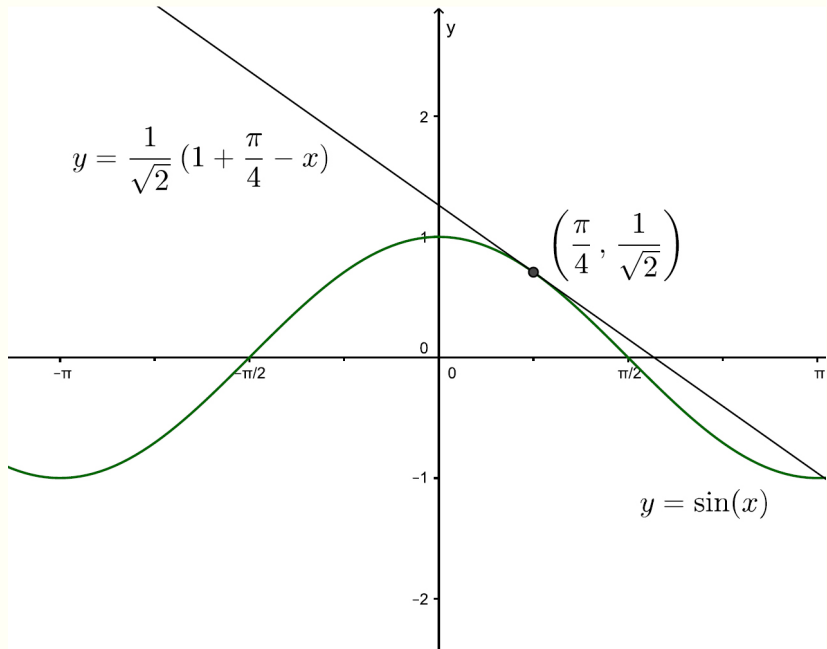
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Standard practice is to use 300 pixels to fill an inch (300dpi) on the page.





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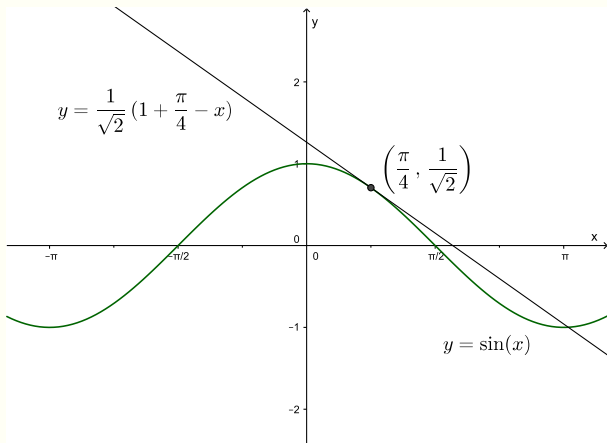
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The big advantage of PDF images is *scalability*. PDFs save images as instructions (e.g. 'create a circle of radius \* with centre \*'). Because of this, images created as PDFs often look very smooth.



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Opening an image in a graphics program (e.g. Adobe Photoshop) will allow you to choose the file type when saving. There are also websites that will convert images between different filetypes.

(Note: a blocky JPEG image cannot be made into a smooth PDF by changing the filetype; instead you will need to start again.)

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# Lecture question

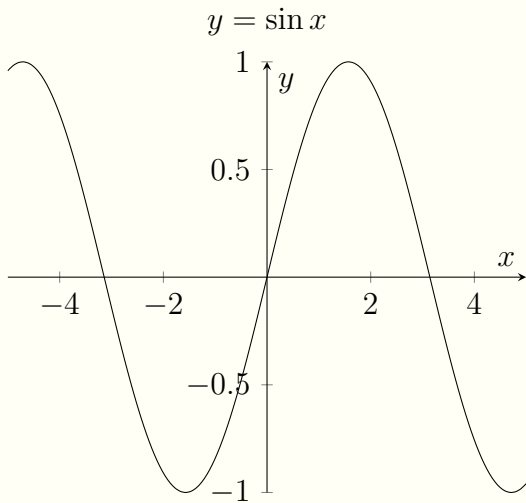
# Using the PGFplots package

For creating graphs quickly, by far the best option is using one of L<sup>A</sup>T<sub>E</sub>X's packages.

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PGFplots can create graphs like this

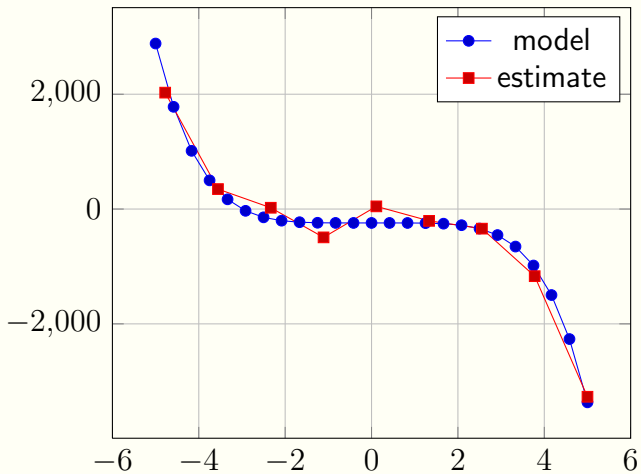
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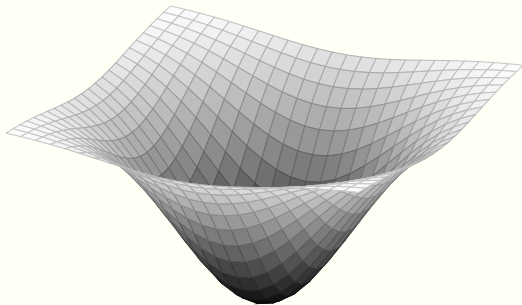


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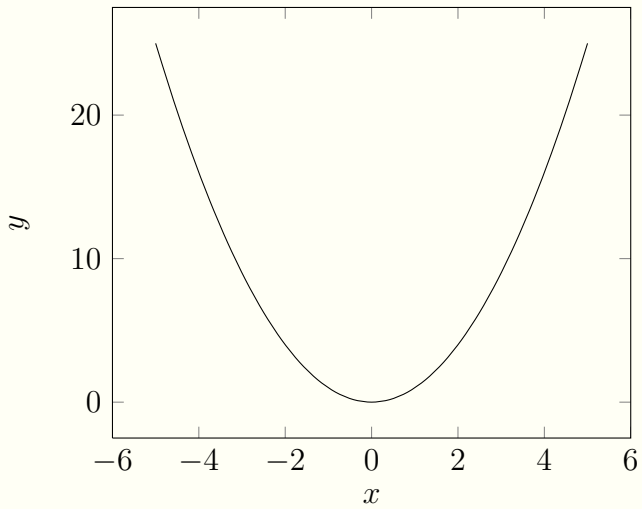
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```
\begin{tikzpicture}
\begin{axis}[xlabel=$x$,ylabel=$y$]
\addplot[smooth]{x^2};
\end{axis}
\end{tikzpicture}
```



We'll look at how to use PGFplots more in Lab 4, but lots of examples are available on the PGFplots webpage at <http://pgfplots.sourceforge.net/gallery.html>.



# Punctuation

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It's not hard to use punctuation correctly once one learns the rules.

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## **Example.**

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A common mistake is to overuse commas, inserting them in places where a pause in speech makes things sound odd. It's best to miss one out if in doubt.

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**Example.**

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We define the function as follows. Given  $x \in \mathbb{R}$ , let

$$f(x) = x^2 + 2.$$

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- The weather took a turn for the worse; the sky became darker.
- I will look at the problem soon; it's on my to-do list.

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*Here is a lesson in creative writing. First rule: Do not use semicolons. All they do is show you've been to college.*

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*Cut out all those exclamation marks. An exclamation mark is like laughing at your own jokes.*

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# About Computer Lab 4

In Computer Lab 4 we'll look at the commands needed to include graphics in a document. We'll also look at a few more  $\text{\LaTeX}$  features that come in handy when creating mathematical documents.