MATLAB lesson 4: Graphics
Exercise sheet

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1 Based on the lesson

These exercises can be completed using information found in the lesson

1. Basic x-y plot
   (a) Create a ten-element vector **x**, with values 1 to 10
   (b) Create a vector **y**, containing 10 random numbers
   (c) Plot **y** against **x**
   (d) Close the figure
2. Customise lines and markers
   Recreate the same **y** vs **x** plot but:
   (a) Set the line width to 2 and set the line style to dashed
   (b) Set the marker style to circles and set the marker size to 8
3. Set axis range
   (a) Set the x-axis range to 2-8, and the y-axis range to 0.2-0.8
   (b) Set the x-range back to 0-10
   (c) Return both axis ranges to the default values
4. Turn the grid on
5. Clear the figure window (without closing it)
6. Plot **y** vs **x** on log-log axes
7. Make your figure intelligible to others
   (a) Give your figure a title
   (b) Label the **x** and **y** axes
   (c) Add a legend in the bottom right corner

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8. Sub-plots

   (a) Create a vector **y1**, equal to **x** squared

   (b) Create a vector **y2**, equal to **x** cubed

   (c) Create a figure window

   (d) Using a 2*2 tiling pattern, create subplots for **y** vs **x** (top left), **y1** vs **x** (top right) and **y2** vs **x** (full width of bottom row).

9. Surface plot

   Using the `peaks(500)` function, create a surface plot

10. Bar chart with sub-plot

    (a) Use the `rand` function to create a matrix with 3 row and 4 columns of data

    (b) Display the data as a bar chart and a stacked bar chart, together in the same figure window

11. Save (hint: print) the figure from the previous question as a png image file

12. Save the current figure as a figure file which can be loaded back into MATLAB

2 Using the MATLAB documentation

These exercises require information from the MATLAB help files

1. Open the figure from the previous question in MATLAB

2. Image plot

   Using the `peaks(500)` function, create an image plot with the colours scaled to represent the values of the matrix.
   (hint: read about 'CDataMapping' on the image plot help page)