Lab 1 Further Exercises

Plotting
1. Plot the function \( f(x) = x^2 \) for values of \( x \) ranging between -5 and 5.
2. Plot the function \( f(x) = x^3 \) for values of \( x \) ranging between -5 and 5.
3. Overlay these plots.

Interactives
4. Complete the following interactive so that it plots the function \( f(x) = ax^3 \) with a plotting range of 0 to 5, so \( a \) can vary from -10 to 10.
   ```python
   @interact
def foo(a=(___#1___,___#2___)):
    p=plot(___#3___, (x,___#4___,___#5___) )
    show(___#6___)
   ```
5. Make an interactive that plots \( f(x) = x^n \) for integer values of \( n \) ranging between 0 and 6 and values of \( x \) ranging between -5 and 5. To make the axes stay in place, use the plotting options \( ymax=5^4 \) and \( ymin=-5^4 \). Remember that you have to use the `show` command to actually see the plot.
6. Copy your code from the previous exercise and write comments explaining what each line does. Include explanations of all plotting options.

Programming review
First, try to answer the following questions without looking at the lab text. Then, you can use the lab text to check and, if necessary, correct your answers. Type your responses as comments.
7. What does “calling a function” mean? What are arguments?
8. When is it useful or necessary to assign a value to a variable? How do you do this?
9. Briefly explain why it might be a good idea to use descriptive variable and function names in your code.