# ANIMATIONS IN GRAPHCALC.EXE

You can download the graphing calculator for windows at the following website

http://www.graphcalc.com

Follow the instructions on the "download" page of that site.

To plot an animation, or a moving graph of a function of two variables $y = f(x, t)$ you go through these steps:

- Open the graphing calculator, and select the graph 1 tab. You will see an $xy$ plane, and a list of ten equations you can enter.
- On the line y1 enter an equation (e.g. `y=x^3-3*x`, which is how you have to enter $y = x^3 - 3x$) and mark the checkbox next to it. The graph should appear.
- To start an animation you have to enter the function of two variables $y = f(x, t)$. ***The windows graphing calculator requires you to call the time variable*** $n$ ***instead of anything else.*** You could enter `n^3-3*n+(3*n^2-3)*(x-n)` on the line for y2.

  Nothing happens.
- To make the animation appear you now click on 2D Graph in the toolbar at the top of the window, select Analysis and then select N-Slider.

  A window shows up with a slider and three boxes in which you can enter numbers. If you entered the y1 and y2 from above, then you could now choose `-2`, `0.1`, and `2` for the Min, Step, and Max. Hit animate and the Movie should appear.

Note: how did I pick y2? Well, the tangent to the graph of $y = f(x)$ at the point on the graph with $x = n$ has equation

$$y = f(n) + f'(n)(x - n)$$

as you know from math 221. I just applied this to $f(x) = x^3 - 3x$. You could practice differentiating by choosing your own functions $f$.