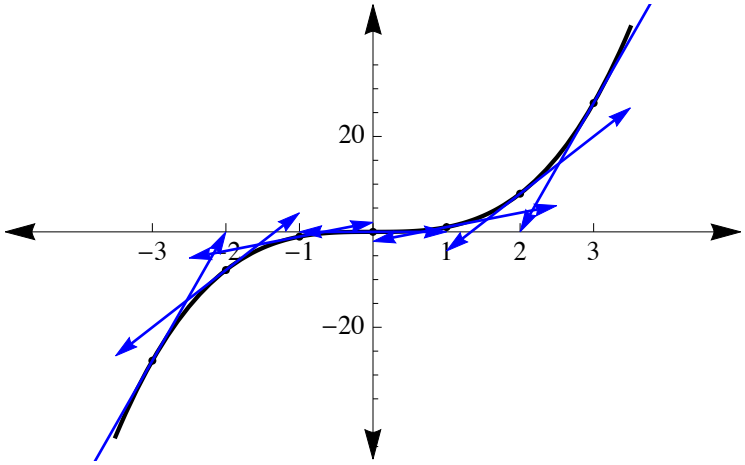
Slope Function for f(x) = x^3

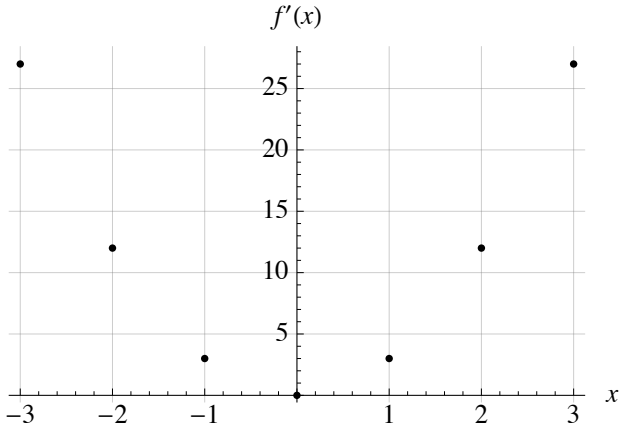
The plot below shows the function $f(x) = x^3$ with a number of tangent lines drawn.



With a little effort (and the help of graphing tools such as Desmos), we can find the slope of each of those tangent lines. The table below summarizes the slopes:

x	−3	−2	−1	0	1	2	3
m	27	12	3	0	3	12	27

There is clearly a pattern in these values, which is even more obvious if we graph the points:



From the table of slopes and the graph of the slopes, the pattern actually gives us the expression for the slope function:

$$f'(x) = 3x^2$$