Alert levels decay following a reverse-exponential graph. for as time, and constant to control the half-life of the calculation.

We can calculate what alpha should be for a given half-life time H using

Which we cancel down to get

Giving our coefficient. We can use our graph to give a decay amount by taking the derivative to get

And since the original time is irrelevant through considering our values of y, A and B, before and after one timestep respectively

Then we can expand B to give

Making the initial start value at beginning of decay AND the distance along it irrelevant, with a nice simple formula for moving ‘along the graph’ and decaying the values.