Updating 3 variables, say *x*, *y*, and *z* in the following manner,

𝑥𝑘+1= 𝑥𝑘− 𝑑𝑘2−𝑘𝑦𝑘

𝑦𝑘+1= 𝑦𝑘+ 𝑑𝑘2−𝑘𝑥𝑘

𝑧𝑘+1= 𝑧𝑘− 𝑑𝑘𝑡𝑎𝑛−1(2−𝑘)

, where 𝑑𝑘=𝑠𝑖𝑔𝑛(𝑧𝑘) = {−1,𝑖𝑓 𝑧𝑘 <01,𝑖𝑓 𝑧𝑘 ≥ 0 .

After enough iterations, *x*, *y* and *z* will converge to:

𝑥𝑘=𝐺(𝑥0cos𝑧0− 𝑦0sin𝑧0)

𝑦𝑘=𝐺(𝑥0sin𝑧0− 𝑦0cos𝑧0)

𝑧𝑘=0

*,* where *G=1.64676*

*Schematic*



When we choose 𝑑𝑘 as 𝑑𝑘=−𝑠𝑖𝑔𝑛(𝑦𝑘)

After enough iterations, *x, y, z* will converge as follows:

𝑥𝑘=𝐺

𝑦𝑘=0

𝑧𝑘=𝑧0+ 𝑡𝑎𝑛−1(𝑦0/𝑥0)

So, if we choose 𝑥0 , 𝑦0 and 𝑧0 correctly, we can calculate the *sine*, *cosine* and *tan-1* needed in the equations.