Aitken's acceleration method applied to evaluating $\lim_{n\to\infty} s_n$ where $s_n = \sum_{k=1}^{n} \frac{(-1)^{k+1}}{\sqrt{k}}$.

```
N = 20;              % Total number of partial sums to use
M = 7;               % Aitken extrapolate M times
A = zeros(N,M+2);    % Lay out array for sum and extrapolations
A(:,1) = 1:N;        % Store index  n  in first column
                     % Store partial sums in second column of A
A(:,2) = cumsum((-1).^(A(:,1)+1)./sqrt(A(:,1)));
for m = 3:M+2
    A(2*m-3:N,m) = A(2*m-3:N,m-1)-(A(2*m-3:N,m-1)-A(2*m-4:N-1,m-1)).^2./...
                  (A(2*m-3:N,m-1)-2*A(2*m-4:N-1,m-1)+A(2*m-5:N-2,m-1));
end
format long; A       % Print out the array A
```

Digits that are in common with the result above are underlined.

A =

term nr	partial sums	one extrapol.	two extrapol.	three extrapol.	four extrapol.	five extrapol.	six extrapol.	seven extrapol.
1.000000000000000	1.000000000000000	0	0	0	0	0	0	0
2.000000000000000	0.292893218813453	0	0	0	0	0	0	0
3.000000000000000	0.870243488003078	0.610730464009235	0	0	0	0	0	0
4.000000000000000	0.370243488003078	0.602294295571956	0	0	0	0	0	0
5.000000000000000	0.817457083503036	0.606311465502868	0.605015615845796	0	0	0	0	0
6.000000000000000	0.409208793039173	0.604035318219648	0.604858548048787	0	0	0	0	0
7.000000000000000	0.787173266048401	0.605470361320586	0.604915458853081	0.604900322574847	0	0	0	0
8.000000000000000	0.433619875455127	0.604497452366801	0.604890546502749	0.604898131460844	0	0	0	0
9.000000000000000	0.766953208788460	0.605192750708937	0.604902954719099	0.604898829277106	0.604898660720758	0	0	0
10.000000000000000	0.450725442771622	0.604675548620081	0.604896165449469	0.604898566502511	0.604898638385860	0	0	0
11.000000000000000	0.752236787349386	0.605072572958643	0.604900155797332	0.604898678669217	0.604898645113644	0.604898643556215	0	0
12.000000000000000	0.463561652754573	0.604759962567031	0.604897674621963	0.604898625902055	0.604898642783811	0.604898643383099	0	0
13.000000000000000	0.740911750867187	0.605011313080808	0.604899289215018	0.604898652726217	0.604898643685839	0.604898643434079	0.604898643422481	0
14.000000000000000	0.473650508954763	0.604805639557235	0.604898198361240	0.604898638200586	0.604898643303247	0.604898643417192	0.604898643421394	0
15.000000000000000	0.731849398701924	0.604976468388238	0.604898958940695	0.604898646490267	0.604898643478307	0.604898643423351	0.604898643421705	0.604898643421636
16.000000000000000	0.481849398701924	0.604832744909341	0.604898414235988	0.604898641545279	0.604898643392919	0.604898643420913	0.604898643421605	0.604898643421629
17.000000000000000	0.724385023738257	0.604955024319585	0.604898813448275	0.604898644608800	0.604898643436901	0.604898643421949	0.604898643421640	0.604898643421631
18.000000000000000	0.488682763342741	0.604849962236632	0.604898514927648	0.604898642647816	0.604898643413156	0.604898643421481	0.604898643421627	0.604898643421630
19.000000000000000	0.718098497213303	0.604941019764130	0.604898742129094	0.604898643939386	0.604898643426511	0.604898643421704	0.604898643421632	0.604898643421630
20.000000000000000	0.494491699463324	0.604861485754397	0.604898566484232	0.604898643067080	0.604898643418726	0.604898643421593	0.604898643421630	0.604898643421630