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In[45]:= l = WolframAlpha["5000 digits of the MRB Constant", "Result"];
In[46]:= Table[c = Convergents[l, 200]; l = FromContinuedFraction[c], {n, 1, 20}]; N[l, Floor[30]]
Out[46]= 0.555753104278045912445404118914
In[55]:= Table[{N[l = m / 10], Table[c = Convergents[l, 200]; l = FromContinuedFraction[c], {n, 1, 20}];
  N[l, Floor[30]]}, {m, 1, 100}] // TableForm

ContinuedFraction::incomp : Warning: ContinuedFraction terminated before 200 terms. >>
ContinuedFraction::incomp : Warning: ContinuedFraction terminated before 200 terms. >>
ContinuedFraction::incomp : Warning: ContinuedFraction terminated before 200 terms. >>
General::stop : Further output of ContinuedFraction::incomp will be suppressed during this calculation. >>

Out[55]//TableForm=
0.1    10.000000000000000000000000000000
0.2    5.000000000000000000000000000000
0.3    1.499999999999999999999999999999
0.4    3.000000000000000000000000000000
0.5    2.000000000000000000000000000000
0.6    0.555753104278045912445404118914
0.7    0.555753104278045912445404118914
0.8    1.499999999999999999999999999999
0.9    0.555753104278045912445404118914
1.     1.000000000000000000000000000000
1.1    1.499999999999999999999999999999
1.2    1.499999999999999999999999999999
1.3    1.499999999999999999999999999999
1.4    1.499999999999999999999999999999
1.5    1.499999999999999999999999999999
1.6    1.499999999999999999999999999999
1.7    1.499999999999999999999999999999
1.8    1.499999999999999999999999999999
1.9    1.499999999999999999999999999999
2.     2.000000000000000000000000000000
2.1    2.34840747027923017753942106198
2.2    2.34840747027923017753942106198
2.3    2.34840747027923017753942106198
2.4    2.34840747027923017753942106198
2.5    2.34840747027923017753942106198
2.6    2.34840747027923017753942106198
2.7    2.34840747027923017753942106198
2.8    2.34840747027923017753942106198
2.9    2.34840747027923017753942106198
3.     3.000000000000000000000000000000
3.1    3.27650338501442446313869723500
3.2    3.27650338501442446313869723500
3.3    3.27650338501442446313869723500
3.4    3.27650338501442446313869723500
3.5    3.27650338501442446313869723500
3.6    3.27650338501442446313869723500
3.7    3.27650338501442446313869723500
3.8    3.27650338501442446313869723500
3.9    3.27650338501442446313869723500
4.     4.000000000000000000000000000000
4.1    4.22347020820989381899229465580
4.2    4.22347020820989381899229465580

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4.3 4.22347020820989381899229465580
4.4 4.22347020820989381899229465580
4.5 4.22347020820989381899229465580
4.6 4.22347020820989381899229465580
4.7 4.22347020820989381899229465580
4.8 4.22347020820989381899229465580
4.9 4.22347020820989381899229465580
5. 5.000000000000000000000000000000
5.1 5.18565646992802409017974449703
5.2 5.18565646992802409017974449703
5.3 5.18565646992802409017974449703
5.4 5.18565646992802409017974449703
5.5 5.18565646992802409017974449703
5.6 5.18565646992802409017974449703
5.7 5.18565646992802409017974449703
5.8 5.18565646992802409017974449703
5.9 5.18565646992802409017974449703
6. 6.000000000000000000000000000000
6.1 6.15810303145254827410063597755
6.2 6.15810303145254827410063597755
6.3 6.15810303145254827410063597755
6.4 6.15810303145254827410063597755
6.5 6.15810303145254827410063597755
6.6 6.15810303145254827410063597755
6.7 6.15810303145254827410063597755
6.8 6.15810303145254827410063597755
6.9 6.15810303145254827410063597755
7. 7.000000000000000000000000000000
7.1 7.13735628625292704311007524679
7.2 7.13735628625292704311007524679
7.3 7.13735628625292704311007524679
7.4 7.13735628625292704311007524679
7.5 7.13735628625292704311007524679
7.6 7.13735628625292704311007524679
7.7 7.13735628625292704311007524679
7.8 7.13735628625292704311007524679
7.9 7.13735628625292704311007524679
8. 8.000000000000000000000000000000
8.1 8.12126618497817841315615757897
8.2 8.12126618497817841315615757897
8.3 8.12126618497817841315615757897
8.4 8.12126618497817841315615757897
8.5 8.12126618497817841315615757897
8.6 8.12126618497817841315615757897
8.7 8.12126618497817841315615757897
8.8 8.12126618497817841315615757897
8.9 8.12126618497817841315615757897
9. 9.000000000000000000000000000000
9.1 9.10846444629835855991014157961
9.2 9.10846444629835855991014157961
9.3 9.10846444629835855991014157961
9.4 9.10846444629835855991014157961
9.5 9.10846444629835855991014157961
9.6 9.10846444629835855991014157961
9.7 9.10846444629835855991014157961
9.8 9.10846444629835855991014157961

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9.9      9.10846444629835855991014157961
10.      10.000000000000000000000000000000
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In[56]:= Random [ ]
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Out[56]= 0.8038135005384821

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In[57]:= Table[{N[l = m / 10 + Random[] * Exp[-5]], Table[c = Convergents[l, 200];  
l = FromContinuedFraction[c], {n, 1, 20}]; N[l, Floor[30]]}, {m, 1, 100}] // TableForm
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ContinuedFraction::incomp : Warning: ContinuedFraction terminated before 200 terms. >>

ContinuedFraction::incomp : Warning: ContinuedFraction terminated before 200 terms. >>

ContinuedFraction::incomp : Warning: ContinuedFraction terminated before 200 terms. >>

General::stop : Further output of ContinuedFraction::incomp will be suppressed during this calculation. >>

Out[57]//TableForm=

[illegible]

4.200031261009337	4.22347020820989381899229465580
4.306317260014799	4.22347020820989381899229465580
4.40342028144274	4.22347020820989381899229465580
4.503078892386002	4.22347020820989381899229465580
4.60261713717268	4.22347020820989381899229465580
4.705018726550084	4.22347020820989381899229465580
4.8006933423923925	4.22347020820989381899229465580
4.904069295300183	4.22347020820989381899229465580
5.002248082744399	5.18565646992802409017974449703
5.101410646194107	5.18565646992802409017974449703
5.204547229877436	5.18565646992802409017974449703
5.303771704926504	5.18565646992802409017974449703
5.4044510598346625	5.18565646992802409017974449703
5.5008044308558794	5.18565646992802409017974449703
5.604428959270891	5.18565646992802409017974449703
5.704992648563347	5.18565646992802409017974449703
5.800060749123389	5.18565646992802409017974449703
5.904883117221166	5.18565646992802409017974449703
6.002088236507072	6.15810303145254827410063597755
6.101355868401484	6.15810303145254827410063597755
6.200199158180808	6.15810303145254827410063597755
6.30449177589523	6.15810303145254827410063597755
6.404000857248379	6.15810303145254827410063597755
6.5019309485341665	6.15810303145254827410063597755
6.60016789717147	6.15810303145254827410063597755
6.704912462879517	6.15810303145254827410063597755
6.800580575805639	6.15810303145254827410063597755
6.905590003147251	6.15810303145254827410063597755
7.004288706997875	7.13735628625292704311007524679
7.1066316833285175	7.13735628625292704311007524679
7.206625180412332	7.13735628625292704311007524679
7.301520707847067	7.13735628625292704311007524679
7.402040624253477	7.13735628625292704311007524679
7.505221037134411	7.13735628625292704311007524679
7.602077950534896	7.13735628625292704311007524679
7.704486949919648	7.13735628625292704311007524679
7.8043275114179	7.13735628625292704311007524679
7.904416606278532	7.13735628625292704311007524679
8.00438693826309	8.12126618497817841315615757897
8.106232248355386	8.12126618497817841315615757897
8.204266762294509	8.12126618497817841315615757897
8.306271436056452	8.12126618497817841315615757897
8.402298701756019	8.12126618497817841315615757897
8.504876379953902	8.12126618497817841315615757897
8.604067604113704	8.12126618497817841315615757897
8.70177966016122	8.12126618497817841315615757897
8.805035791506727	8.12126618497817841315615757897
8.902945431419736	8.12126618497817841315615757897
9.003899706942233	9.10846444629835855991014157961
9.10360514428079	9.10846444629835855991014157961
9.204455215701087	9.10846444629835855991014157961
9.304093375271572	9.10846444629835855991014157961
9.406348946943442	9.10846444629835855991014157961
9.503711407951357	9.10846444629835855991014157961
9.60456798228784	9.10846444629835855991014157961
9.702572667424503	9.10846444629835855991014157961

9.804308322689966	9.10846444629835855991014157961
9.905228317816032	9.10846444629835855991014157961
10.002490031752945	10.0980577066244279660274026688