```
> x0 := 0.5;
```

$$x0 := 0.5 \tag{1}$$

```
> N := 200;
```

$$N := 200 \tag{2}$$

```
> x := x0; for k from 1 to N do x := x·(1 − x) : psi(k) := x : print(x); od: points := [[n,
      psi(n)] $n = 1..N] : with(plots) : pointplot(points, symbol = circle);
```

$$x := 0.5$$

0.25

0.1875

0.15234375

0.1291351318

0.1124592495

0.09981216670

0.08984969808

0.08177672983

0.07508929629

0.06945089387

0.06462746721

0.06045075769

0.05679646358

0.05357062530

0.05070081340

0.04813024092

0.04581372083

0.04371482382

0.04180383800

0.04005627713

0.03845177179

0.03697323304

0.03560621308

0.03433841067

0.03315928422

0.03205974609

0.03103191877

0.03006893879

0.02916479771

0.02831421228

0.02751251766

0.02675557903
0.02603971802
0.02536165111
0.02471843776
0.02410743659
0.02352626809
0.02297278280
0.02244503405
0.02194125450
0.02145983585
0.02099931130
0.02055834022
0.02013569487
0.01973024866
0.01934096595
0.01896689299
0.01860714996
0.01826092393
0.01792746259
0.01760606867
0.01729609502
0.01699694012
0.01670804415
0.01642888541
0.01615897713
0.01589786459
0.01564512249
0.01540035263
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0.01471025744
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0.01428379362
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0.01388152702
0.01368883023
0.01350144616
0.01331915711

0.01314175716
0.01296905138
0.01280085509
0.01263699320
0.01247729960
0.01232161659
0.01216979435
0.01202169045
0.01187716941
0.01173610226
0.01159836616
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0.01133242434
0.01120400050
0.01107847087
0.01095573835
0.01083571015
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0.01049098322
0.01038092249
0.01027315894
0.01016762115
0.01006424063
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0.009766398879
0.009671016332
0.009577487775
0.009485759503
0.009395779870
0.009307499190
0.009220869649
0.009135845212
0.009052381544
0.008970435933
0.008889967212
0.008810935695

0.008733303107
0.008657032524
0.008582088312
0.008508436072
0.008436042587
0.008364875772
0.008294904625
0.008226099182
0.008158430474
0.008091870486
0.008026392118
0.007961969148
0.007898576196
0.007836188690
0.007774782837
0.007714335589
0.007654824615
0.007596228275
0.007538525591
0.007481696223
0.007425720445
0.007370579121
0.007316253685
0.007262726117
0.007209978926
0.007157995130
0.007106758236
0.007056252224
0.007006461529
0.006957371026
0.006908966015
0.006861232204
0.006814155697
0.006767722979
0.006721920905
0.006676736684
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0.006588172353

0.006544768338
0.006501934346
0.006459659196
0.006417931999
0.006376742148
0.006336079308
0.006295933407
0.006256294630
0.006217153408
0.006178500412
0.006140326545
0.006102622935
0.006065380929
0.006028592083
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0.005956341122
0.005920863123
0.005885806503
0.005851163785
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0.005749646877
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0.005100901639
0.005074882442
0.005049128010
0.005023634316
0.004998397414
0.004973413437
0.004948678596
0.004924189176
0.004899941537
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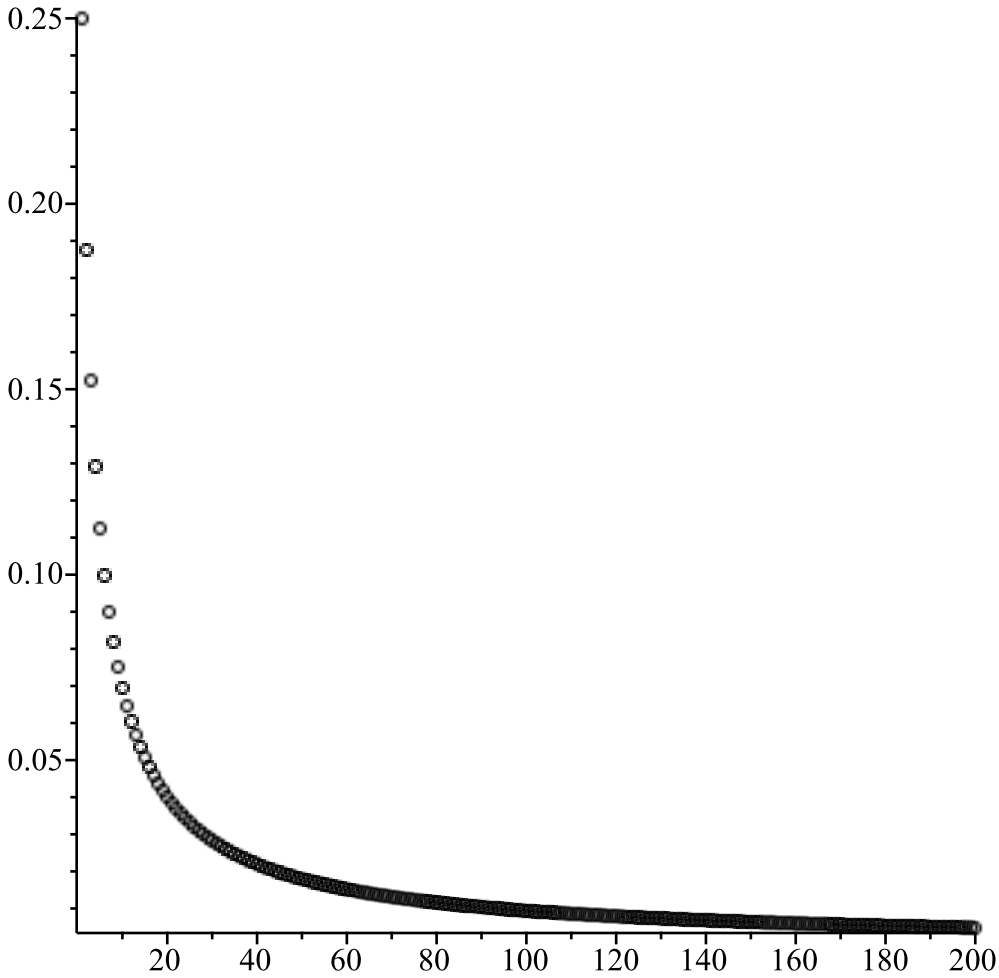
0.004828613965



```
> x0 := 0;
```

$$x0 := 0 \tag{3}$$

```
> x := x0; for k from 1 to N do x := x·(1 − x) : psi(k) := x : print(x); od: points := [[n,
     psi(n)] $n = 1 ..N] : with(plots) : pointplot(points, symbol = circle);
```

$$x := 0$$

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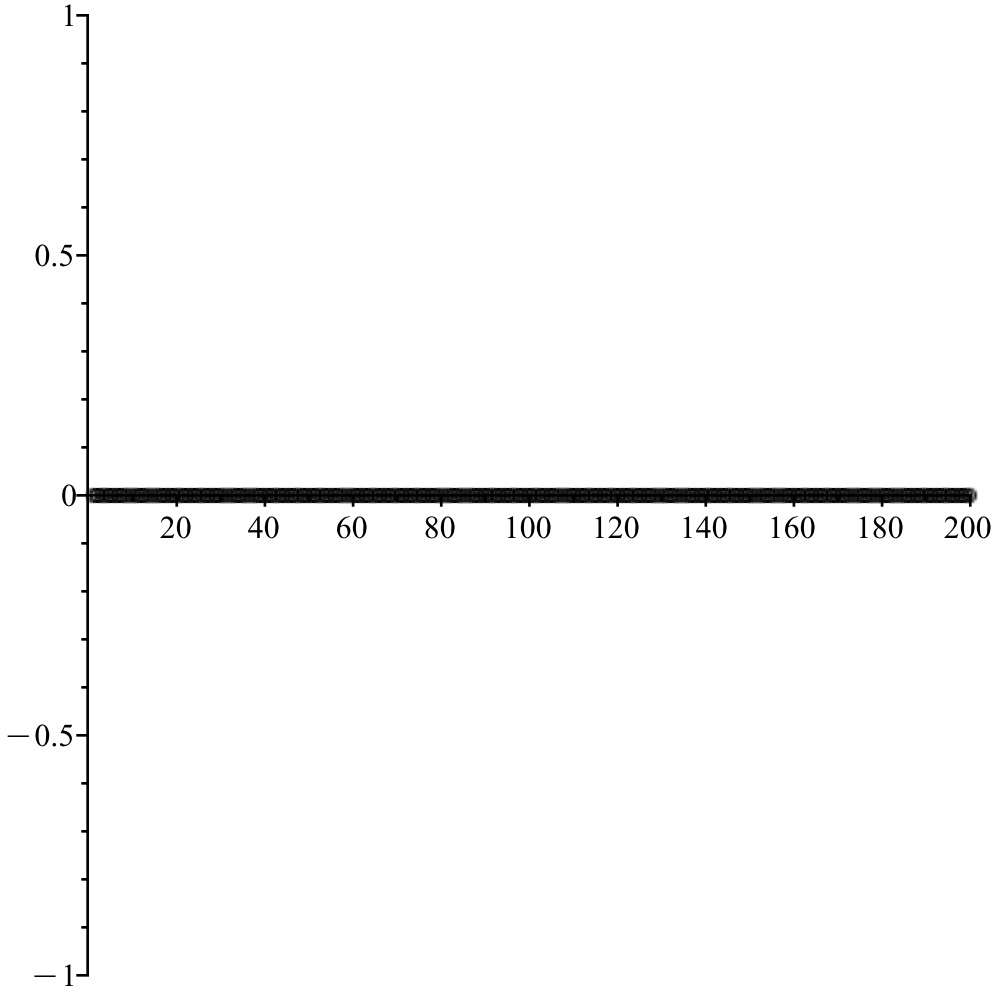

> $x0 := 0.7;$

$x0 := 0.7$ **(4)**

```
> x := x0; for k from 1 to N do x := x·(1 − x) : psi(k) := x : print(x); od: points := [[n,
      psi(n)] $n = 1..N] : with(plots) : pointplot(points, symbol = circle);
```

$$x := 0.7$$

0.21

0.1659

0.13837719

0.1192289433

0.1050134024

0.09398558772

0.08515229702

0.07790138333

0.07183275781

0.06667281272

0.06222754877

0.05835528094

0.05494994213

0.05193044599

0.04923367477

0.04680972004

0.04461857015

0.04262775335

0.04081062799

0.03914512063

0.03761278016

0.03619805893

0.03488775946

0.03367060370

0.03253689415

0.03147824467

0.03048736478

0.02955788537

0.02868421678

0.02786143249

0.02708517307

0.02635156647

0.02565716141

0.02499887148

0.02437392790

0.02377983954
0.02321435877
0.02267545232
0.02216127618
0.02167015402
0.02120055845
0.02075109477
0.02032048684
0.01990756466
0.01951125353
0.01913056452
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0.01841247633
0.01807345705
0.01774680720
0.01743185803
0.01712798836
0.01683462037
0.01655121593
0.01627727318
0.01601232356
0.01575592905
0.01550767975
0.01526719162
0.01503410448
0.01480808018
0.01458880094
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0.01416929938
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0.01339918665
0.01321964845
0.01304488935
0.01287472021
0.01270896179
0.01254744408

0.01239000573
0.01223649349
0.01208676172
0.01194067191
0.01179809226
0.01165889728
0.01152296739
0.01139018861
0.01126045221
0.01113365443
0.01100969617
0.01088848276
0.01076992370
0.01065393244
0.01054042616
0.01042932558
0.01032055475
0.01021404090
0.01010971427
0.01000750795
0.009907357734
0.009809201997
0.009712981553
0.009618639542
0.009526121316
0.009435374329
0.009346348041
0.009258993820
0.009173264854
0.009089116065
0.009006504034
0.008925386919
0.008845724388
0.008767477548
0.008690608886
0.008615082203
0.008540862562
0.008467916228

0.008396210623
0.008325714270
0.008256396752
0.008188228664
0.008121181575
0.008055227985
0.007990341287
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0.006930296726
0.006882267713
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0.006742106745
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0.006520814482
0.006478293460
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0.006354004160
0.006313630791
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0.005034880796
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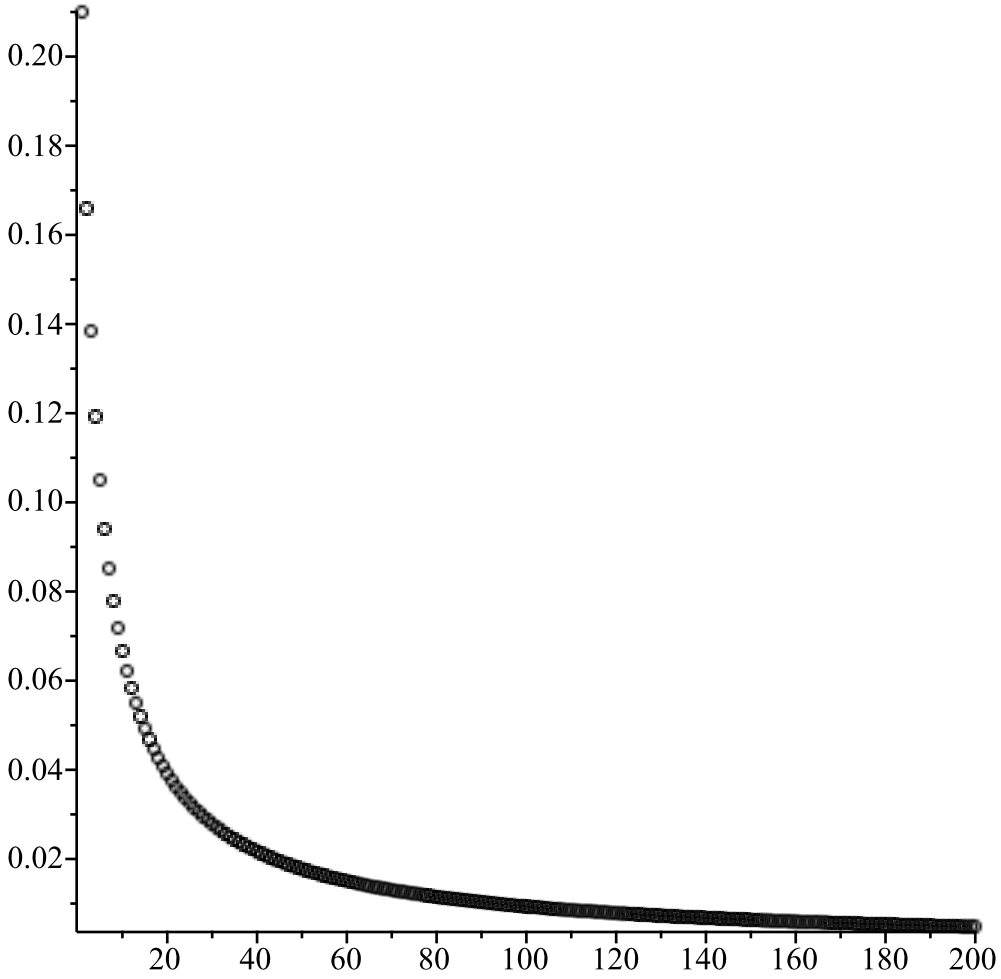


```
> x0 := 0.5;
```

$$x0 := 0.5 \quad \textbf{(5)}$$

```
> x := x0; for k from 1 to N do x := 2 · x · (1 − x) : psi(k) := x : print(x); od: points := [[n,
      psi(n)] $n = 1..N] : with(plots) : pointplot(points, symbol = circle);
```

$$x := 0.5$$

0.50

0.5000

0.50000000

0.5000000000

0.5000000000

0.5000000000

0.5000000000

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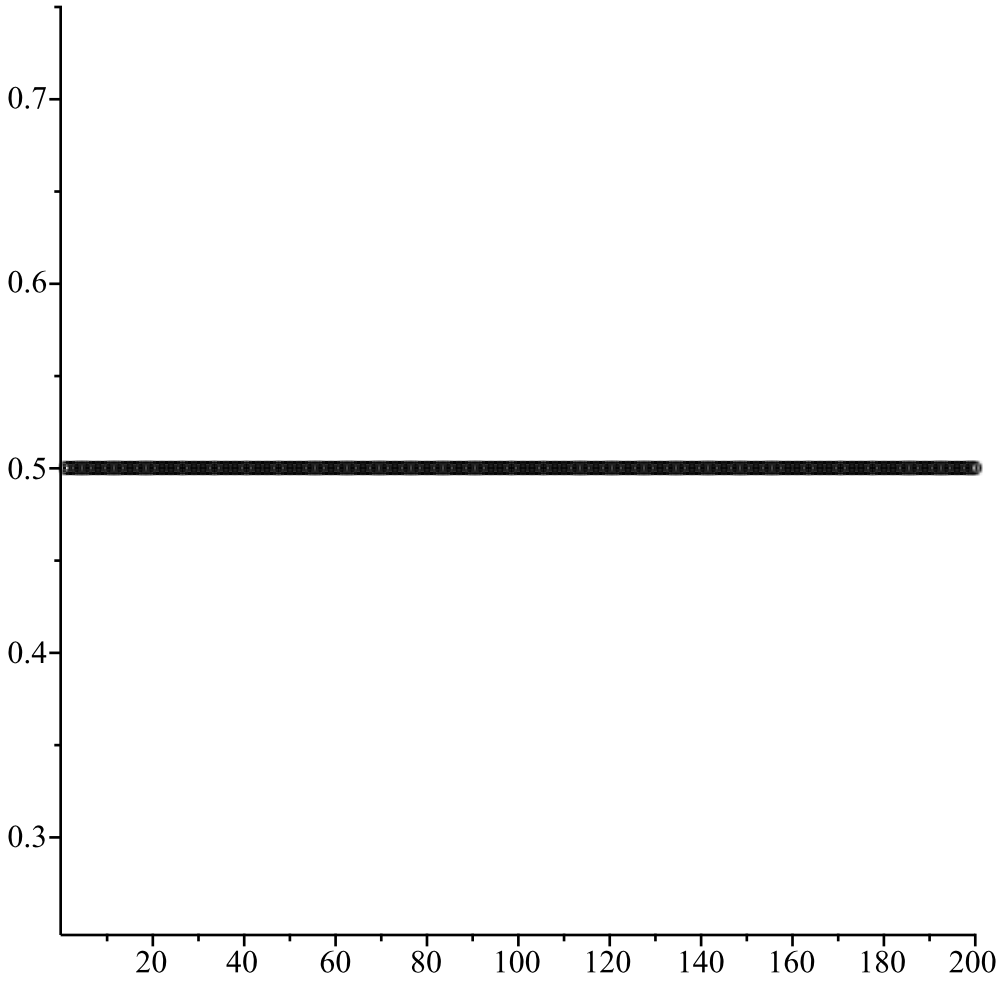

> $x := x0$; **for** k **from** 1 **to** N **do** $x := 3.5 \cdot x \cdot (1 - x)$: psi$(k) := x$: $print(x)$; **od**: $points := [[n,$ psi$(n)]\ \$n = 1..N]$: $with(plots)$: $pointplot(points, symbol = circle)$;

$x := 0.5$

0.875

0.3828125

0.8269348143

0.5008976952
0.8749971794
0.3828199039
0.8269408878
0.5008837956
0.8749972662
0.3828196760
0.8269407010
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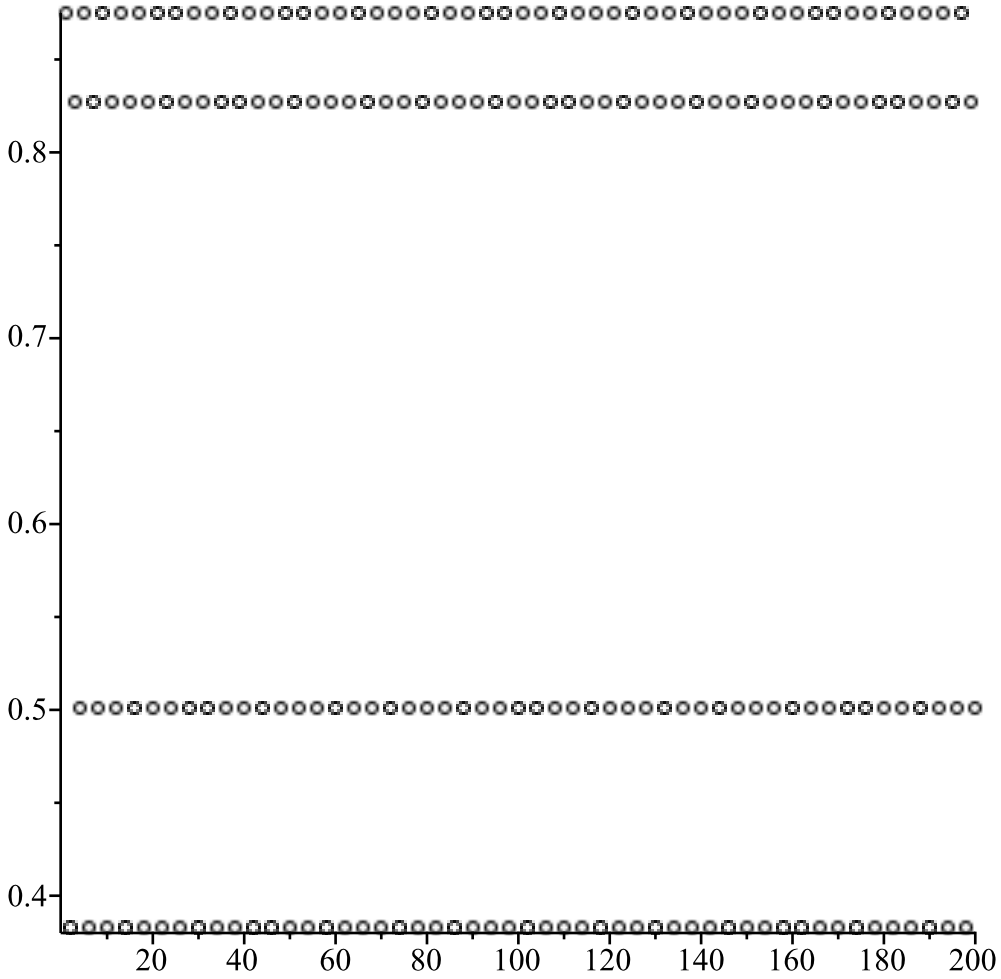
0.5008842111



> $x := x0$; **for** k **from** 1 **to** N **do** $x := 3.6 \cdot x \cdot (1 - x)$: psi$(k) := x$: $print(x)$; **od**: $points := [[n,$ psi$(n)]\ \$n = 1..N]$: $with(plots)$: $pointplot(points, symbol = circle)$;

$x := 0.5$

0.900

0.3240000

0.7884864000

0.6003921492

0.8637170990

0.4237555388

0.8790724156

0.3826947733
0.8504621417
0.4578346339
0.8935994948
0.3422859757
0.8104546314
0.5530245185
0.8898782414
0.3527818448
0.8219765333
0.5267920032
0.8974158790
0.3314182288
0.7976886710
0.5809732387
0.8763960046
0.3899737717
0.8564192248
0.4426752103
0.8881699266
0.3575667891
0.8269660094
0.5151356233
0.8991752864
0.3263727266
0.7914728516
0.5941568765
0.8680841374
0.4122506441
0.8722801818
0.4010668783
0.8647640546
0.4210098642
0.8775380102
0.3868741832
0.8539291786
0.4490428914
0.8906521432

0.3506072508
0.8196545034
0.5321555946
0.8962776637
0.3346704477
0.8015981008
0.5725389082
0.8810571845
0.3772635196
0.8457687230
0.4695983647
0.8966726662
0.3335428652
0.8002512803
0.5754570073
0.8795024640
0.3815203673
0.8494652758
0.4603464756
0.8943393528
0.3401873094
0.8080556540
0.5583661704
0.8877362047
0.3587782880
0.8282031412
0.5122177132
0.8994626190
0.3255466177
0.7904376626
0.5963254708
0.8665970533
0.4161837618
0.8747094175
0.3945342686
0.8599571262
0.4335511223
0.8841043681

0.3688698038
0.8380975378
0.4884841976
0.8995225907
0.3253741183
0.7902208850
0.5967786164
0.8662820378
0.4170148877
0.8752084960
0.3931869042
0.8589274654
0.4362158686
0.8853537046
0.3654090806
0.8347870238
0.4965035353
0.8999559889
0.3241267450
0.7886469535
0.6000585703
0.8639578170
0.4231249466
0.8787248143
0.3836430540
0.8512598200
0.4558195400
0.8929731132
0.3440596763
0.8124574154
0.5485333090
0.8915202644
0.3481627772
0.8170036481
0.5382312736
0.8947381309
0.3390545088
0.8067475760

0.5612613286
0.8864893786
0.3622534567
0.8316932033
0.5039266280
0.8999444938
0.3241598468
0.7886888658
0.5999714597
0.8640205459
0.4229605519
0.8786337242
0.3838914104
0.8514676634
0.4552937338
0.8928048593
0.3445356330
0.8129909902
0.5473319044
0.8919348869
0.3469933599
0.8157202852
0.5411545254
0.8939026980
0.3414263922
0.8094758792
0.5552088487
0.8890271388
0.3551683870
0.8244856940
0.5209525238
0.8984195701
0.3285426462
0.7941685529
0.5884735050
0.8718207800
0.4022975074
0.8656352024

0.4187192357
0.8762163746
0.3904604622
0.8568039229
0.4416874582
0.8877587310
0.3587153995
0.8281391821
0.5123688379
0.8994492425
0.3255850896
0.7904859804
0.5962244227
0.8666670978
0.4159988618
0.8745977117
0.3948355958
0.8601856132
0.4329587664
0.8838197028
0.3696567685
0.8388383112
0.4866789560
0.8993611793
0.3258383345
0.7908037715
0.5955593994
0.8671262443
0.4147859545
0.8738588390
0.3968264466
0.8616787844
0.4290784448
0.8818924788
0.3749692846
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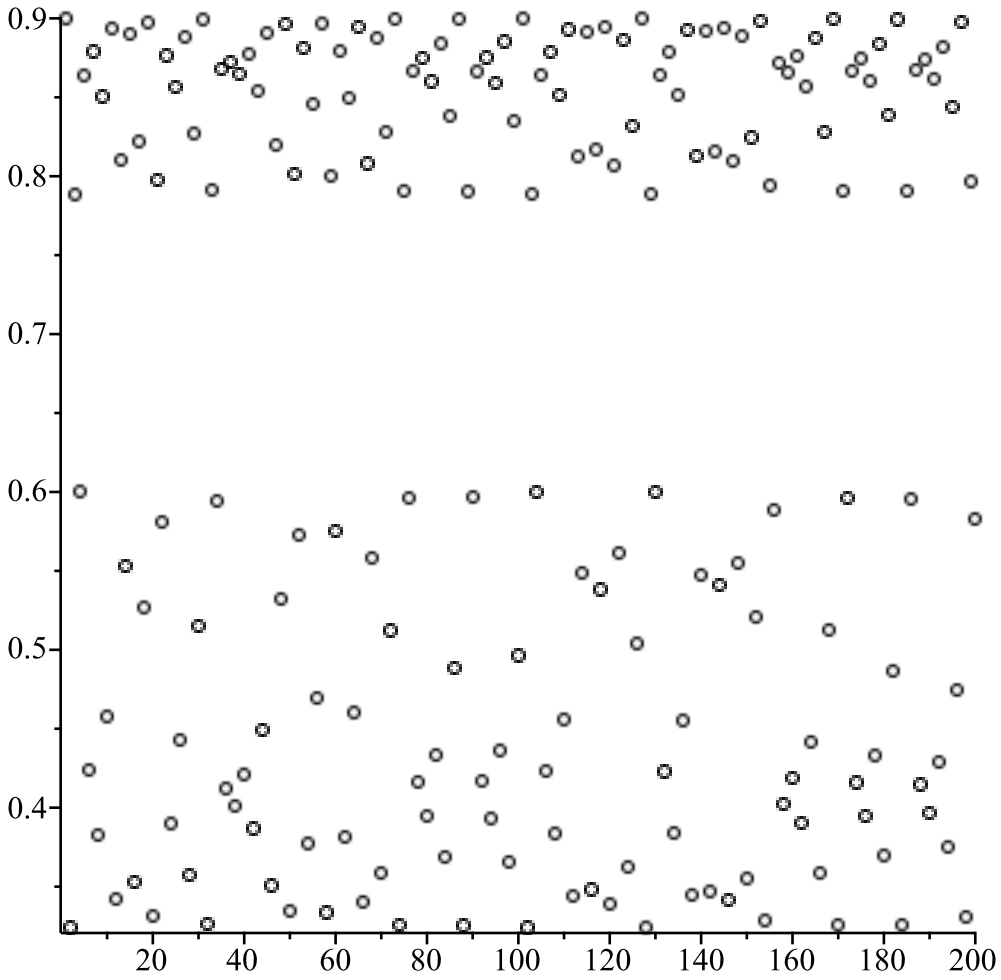
0.4746777995
0.8976916303

0.3306289219

0.7967283764

0.5830281742




```
> x := x0; for k from 1 to N do x := 3.8·x·(1 − x) : psi(k) := x : print(x); od: points := [[n,
  psi(n)] $n = 1..N] : with(plots) : pointplot(points, symbol = circle);
```

$x := 0.5$

0.950

0.1805000

0.5620950500

0.9353479782

0.2297941239

0.6725573811

0.8368510108

0.5188193067

0.9486541681

0.1850958623

0.5731744596

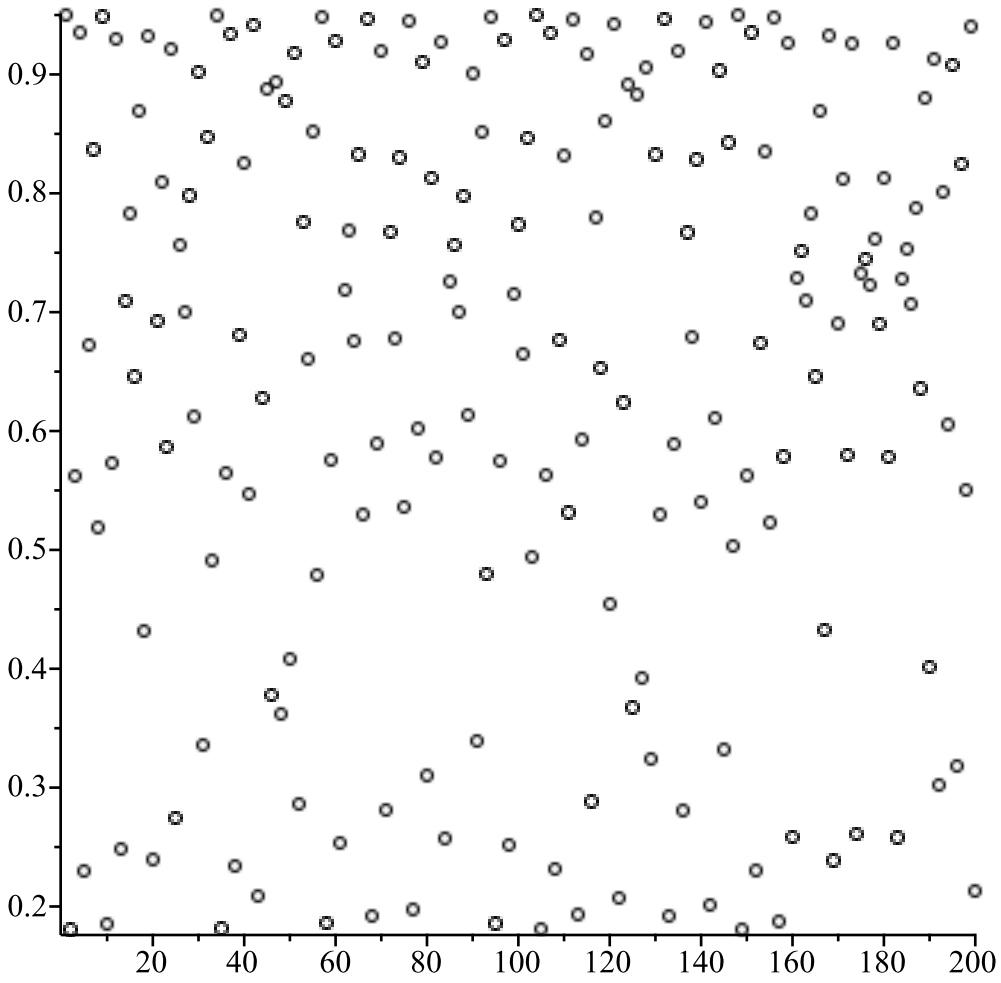
0.9296528943
0.2485138836
0.7096679865
0.7829494745
0.6457704606
0.8692536966
0.4318764885
0.9323649114
0.2396302169
0.6923887888
0.8093489048
0.5863523694
0.9216644195
0.2743566459
0.7565232918
0.6999440430
0.7980850429
0.6123521674
0.9020325639
0.3358053067
0.8475523903
0.4909878768
0.9496913701
0.1815551523
0.5646529402
0.9341159897
0.2338645685
0.6808533420
0.8257098611
0.5468697283
0.9416522687
0.2087844395
0.6277352897
0.8879980440
0.3779385678
0.8933838258
0.3619468293
0.8775770240

0.4082552454
0.9180150200
0.2860010836
0.7759769624
0.6605795216
0.8520140254
0.4791272784
0.9483444521
0.1861515586
0.5756967920
0.9282259837
0.2531655261
0.7184764215
0.7686186022
0.6758073771
0.8325487116
0.5297631467
0.9466337894
0.1919693810
0.5894451236
0.9195983656
0.2809614040
0.7676839553
0.6777121404
0.8299899018
0.5362053259
0.9450188627
0.1974412050
0.6021410673
0.9103553691
0.3101121900
0.8129819545
0.5777607256
0.9270224245
0.2570770261
0.7257560294
0.7563300178
0.7003207036

0.7975121397
0.6136488015
0.9009190096
0.3392030014
0.8517484358
0.4798375440
0.9484552065
0.1857741255
0.5747959792
0.9287411337
0.2514879530
0.7153186975
0.7738238623
0.6650778711
0.8464473267
0.4939021492
0.9498587016
0.1809831646
0.5632673831
0.9347895052
0.2316407274
0.6763365430
0.8318406097
0.5315508772
0.9462172600
0.1933825961
0.5927459169
0.9173131406
0.2882290222
0.7795816014
0.6529696872
0.8610810442
0.4545578221
0.9421530323
0.2071026449
0.6240023297
0.8915690044
0.3673601162

0.8831453126
0.3921587437
0.9058070009
0.3242185765
0.8325833866
0.5296755058
0.9466535847
0.1919021860
0.5892878006
0.9197052171
0.2806206168
0.7671162076
0.6788659401
0.8284265069
0.5401169125
0.9438844065
0.2012732079
0.6108967541
0.9032672576
0.3320269720
0.8427832352
0.5034986841
0.9499534850
0.1806590731
0.5624812151
0.9351651716
0.2303988390
0.6737978132
0.8352184164
0.5229887305
0.9479917695
0.1873528229
0.5785566223
0.9265496570
0.2586104824
0.7285781830
0.7514576543
0.7097223828

0.7828627844
0.6459568518
0.8690470701
0.4324561884
0.9326637673
0.2386478450
0.6904411942
0.8121821761
0.5796606978
0.9258858582
0.2607606960
0.7325053105
0.7445768663
0.7226921947
0.7615511083
0.6900458673
0.8127537595
0.5783033264
0.9267006386
0.2581209471
0.7276791904
0.7530163079
0.7067344420
0.7875913079
0.6357067105
0.8800180171
0.4012279655
0.9129275238
0.3020652683
0.8011229996
0.6054347686
0.9077573365
0.3181890272
0.8243901268
0.5501299733
0.9404505460
0.2128126028




```
> x := x0; for k from 1 to N do x := 3.1·x·(1 − x) : psi(k) := x : print(x); od: points := [[n,
  psi(n)] $n = 1..N] : with(plots) : pointplot(points, symbol = circle);
```

$x := 0.5$

0.775

0.5405625

0.7698995192

0.5491781734

0.7675026726

0.5531711926

0.7662357553

0.5552674201

0.7655310881

0.5564290480

0.7651288638

0.5570907254

0.7648960122

0.5574733184

0.7647601349
0.5576964201
0.7646804816
0.5578271524
0.7646336632
0.5579039753
0.7646061018
0.5579491938
0.7645898618
0.5579758355
0.7645802878
0.5579915410
0.7645746417
0.5580008029
0.7645713114
0.5580062657
0.7645693466
0.5580094885
0.7645681875
0.5580113900
0.7645675037
0.5580125116
0.7645671004
0.5580131731
0.7645668623
0.5580135637
0.7645667218
0.5580137941
0.7645666391
0.5580139298
0.7645665901
0.5580140101
0.7645665613
0.5580140573
0.7645665445
0.5580140848
0.7645665346
0.5580141013

0.7645665287
0.5580141109
0.7645665250
0.5580141168
0.7645665231
0.5580141202
0.7645665219
0.5580141220
0.7645665210
0.5580141236
0.7645665206
0.5580141242
0.7645665203
0.5580141245
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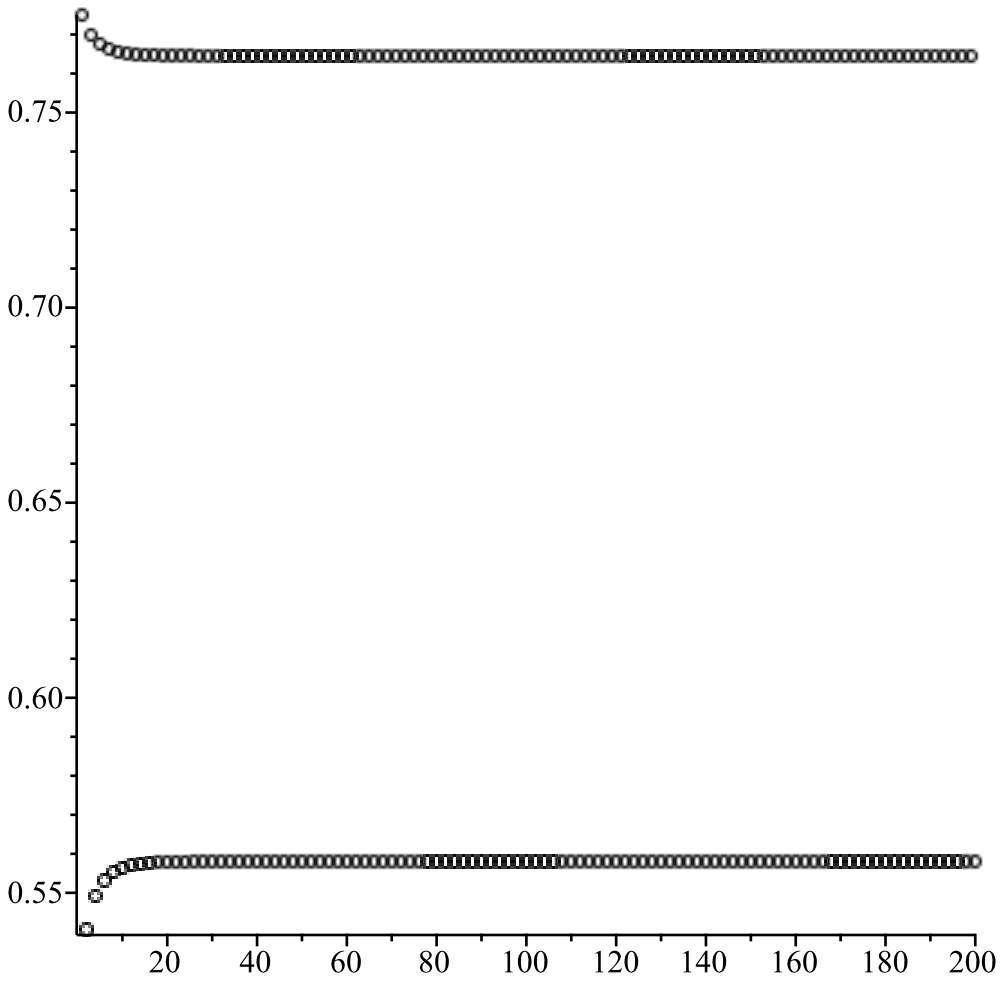
0.7645665203
0.5580141245




```
> x := x0; for k from 1 to N do x := 3.55*x*(1-x) : psi(k) := x : print(x); od: points := [[n,
  psi(n)] $n = 1..N] : with(plots) : pointplot(points, symbol = circle);
```

$x := 0.5$

0.8875

0.3544453125

0.8122891068

0.5412880740

0.8814482969

0.3709650486

0.8283924336

0.5046623541

0.8874228319

0.3546576001

0.8125083331

0.5408018230

0.8815899998

0.3705812060

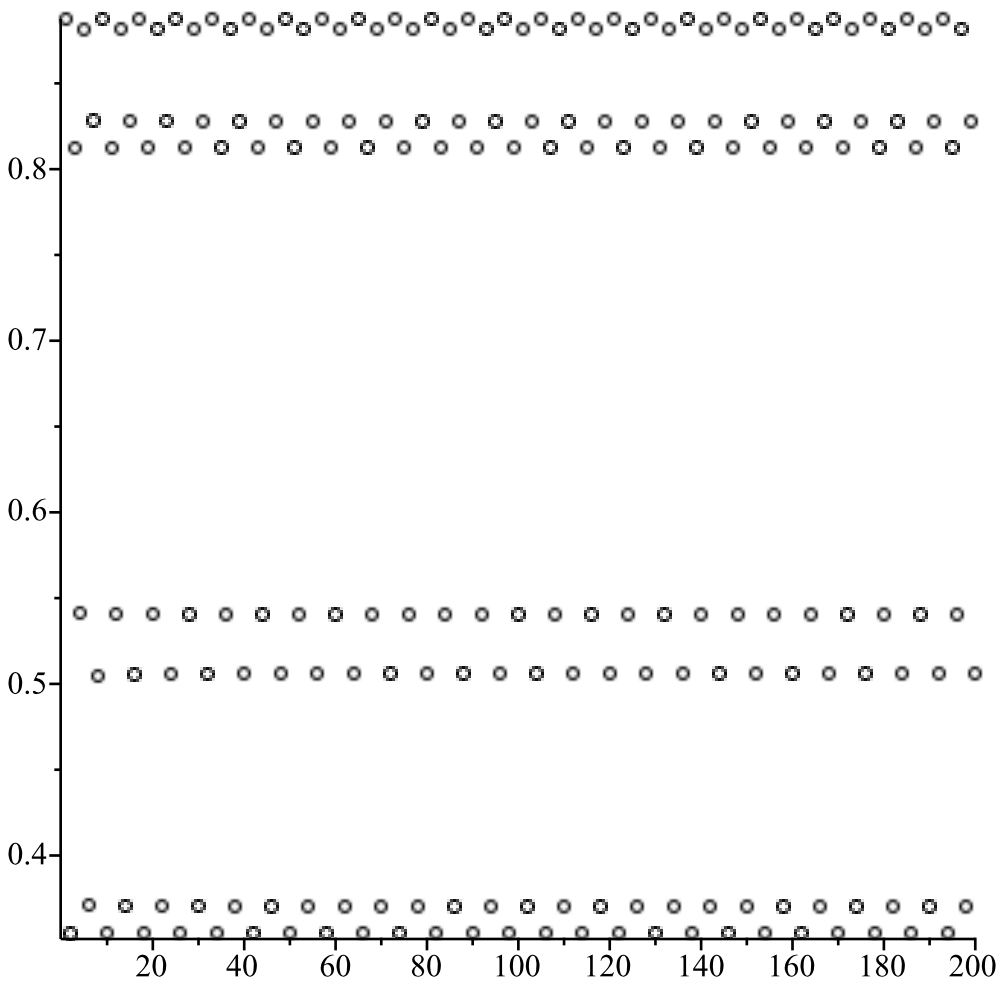
0.8280402541
0.5054830505
0.8873932735
0.3547389034
0.8125922090
0.5406156937
0.8816437972
0.3704354430
0.8279062409
0.5057951151
0.8873807789
0.3547732691
0.8126276479
0.5405370360
0.8816664579
0.3703740379
0.8278497401
0.5059266450
0.8873753059
0.3547883219
0.8126431682
0.5405025854
0.8816763691
0.3703471800
0.8278250194
0.5059841863
0.8873728727
0.3547950141
0.8126500680
0.5404872692
0.8816807726
0.3703352467
0.8278140339
0.5060097552
0.8873717839
0.3547980087
0.8126531550
0.5404804167

0.8816827424
0.3703299089
0.8278091196
0.5060211929
0.8873712955
0.3547993519
0.8126545399
0.5404773424
0.8816836260
0.3703275141
0.8278069147
0.5060263248
0.8873710761
0.3547999554
0.8126551618
0.5404759618
0.8816840226
0.3703264395
0.8278059253
0.5060286273
0.8873709777
0.3548002260
0.8126554409
0.5404753423
0.8816842008
0.3703259567
0.8278054809
0.5060296618
0.8873709334
0.3548003479
0.8126555666
0.5404750633
0.8816842810
0.3703257391
0.8278052807
0.5060301275
0.8873709135
0.3548004026

0.8126556230
0.5404749380
0.8816843169
0.3703256418
0.8278051908
0.5060303370
0.8873709042
0.3548004282
0.8126556493
0.5404748798
0.8816843336
0.3703255967
0.8278051493
0.5060304336
0.8873709003
0.3548004389
0.8126556606
0.5404748545
0.8816843410
0.3703255765
0.8278051308
0.5060304765
0.8873708986
0.3548004436
0.8126556652
0.5404748442
0.8816843438
0.3703255690
0.8278051237
0.5060304932
0.8873708979
0.3548004455
0.8126556674
0.5404748393
0.8816843453
0.3703255651
0.8278051202
0.5060305014

0.8873708975
0.3548004466
0.8126556684
0.5404748372
0.8816843460
0.3703255630
0.8278051184
0.5060305056
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623
0.8278051177
0.5060305070
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623
0.8278051177
0.5060305070
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623
0.8278051177
0.5060305070
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623

0.8278051177
0.5060305070
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623
0.8278051177
0.5060305070
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623
0.8278051177
0.5060305070
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623
0.8278051177
0.5060305070
0.8873708972
0.3548004474
0.8126556691
0.5404748357
0.8816843463
0.3703255623
0.8278051177
0.5060305070



> $x0 := 0.67; y0 := 0.6701;$

$$x0 := 0.67$$
$$y0 := 0.6701 \quad \textbf{(6)}$$

> $N := 40$

$$N := 40 \quad \textbf{(7)}$$

> $x := x0; y := y0;$ **for** k **from** 1 **to** N **do** $x := 4 \cdot x \cdot (1 - x) : y := 4 \cdot y \cdot (1 - y) : print(x, y);$ **od**:

$$x := 0.67$$
$$y := 0.6701$$
$$0.8844, 0.88426396$$
$$0.40894656, 0.4093648360$$
$$0.9668370844, 0.9671410680$$
$$0.1282525465, 0.1271168904$$
$$0.4472153232, 0.4438327464$$
$$0.9888551116, 0.9873809584$$
$$0.04408271944, 0.04983920556$$
$$0.1685577332, 0.1894210366$$

0.5605840952, 0.6141628300

0.9853182696, 0.9478673928

0.05786470876, 0.1976591939

0.2180655370, 0.6343601480

0.6820518344, 0.9277894024

0.8674285184, 0.2679849088

0.4599851356, 0.7846759900

0.9935952424, 0.6758383228

0.02545494672, 0.8763235368

0.09922796964, 0.4335223828

0.3575271188, 0.9823229056

0.9188059124, 0.06945845892

0.2984064310, 0.2585359256

0.8374401316, 0.7667804032

0.5445366304, 0.7153128660

0.9920659544, 0.8145614788

0.03148438608, 0.6042043044

0.1219724780, 0.9565658516

0.4283807704, 0.1661904926

0.9794827440, 0.5542848512

0.08038519284, 0.9882126196

0.2956936545, 0.04659375224

0.8330356688, 0.1776910980

0.5563489732, 0.5844678868

0.9872991728, 0.9714607044

0.05015806476, 0.1108992168

0.1905689332, 0.3944023220

0.6170096596, 0.9553965216

0.9452349584, 0.1704560324

0.2070633273, 0.5656030936

0.6567524232, 0.9827849364

0.9017147112, 0.06767482076 **(8)**

> $x0 := 0.67; y0 := 0.67;$

$$x0 := 0.67$$

$$y0 := 0.67 \quad \textbf{(9)}$$

> $N := 40$

$$N := 40 \quad \textbf{(10)}$$

> $x := x0; y := y0;$ **for** k **from** 1 **to** N **do** $x := 4 \cdot x \cdot (1 - x) : y := 4 \cdot y - 4 \cdot y^2 : print(x, y);$ **od**:

$x := 0.67$

$y := 0.67$

0.8844, 0.8844

0.40894656, 0.40894656

0.9668370844, 0.9668370843

0.1282525465, 0.1282525471

0.4472153232, 0.4472153251

0.9888551116, 0.9888551126

0.04408271944, 0.04408271593

0.1685577332, 0.1685577203

0.5605840952, 0.5605840609

0.9853182696, 0.9853182860

0.05786470876, 0.05786464510

0.2180655370, 0.2180653118

0.6820518344, 0.6820513264

0.8674285184, 0.8674292580

0.4599851356, 0.4599829615

0.9935952424, 0.9935945465

0.02545494672, 0.02545769466

0.09922796964, 0.09923840176

0.3575271188, 0.3575605655

0.9188059124, 0.9188440300

0.2984064310, 0.2982787141

0.8374401316, 0.8372340914

0.5445366304, 0.5450926701

0.9920659544, 0.9918666046

0.03148438608, 0.03226897351

0.1219724780, 0.1249107474

0.4283807704, 0.4372322103

0.9794827440, 0.9842408184

0.08038519284, 0.06204331879

0.2956936545, 0.2327757815

0.8330356688, 0.7143648682

0.5563489732, 0.8161908130

0.9872991728, 0.6000934791

0.05015806476, 0.9599251820

0.1905689332, 0.1538753078

0.6170096596, 0.5207907898

0.9452349584, 0.9982709723

0.2070633273, 0.006904152853

0.6567524232, 0.02742594211

0.9017147112, 0.1066950392 **(11)**

> $de := diff(y(x), x) = 2 \cdot x \cdot y(x);$

$$de := \frac{d}{dx} y(x) = 2 x y(x) \quad \textbf{(12)}$$

> $sol := dsolve(\{de, y(0) = 1\}, y(x));$

$$sol := y(x) = e^{x^2} \quad \textbf{(13)}$$

> $h := 0.1; N := \frac{1}{h};$

$$h := 0.1$$

$$N := 10. \quad \textbf{(14)}$$

>

> $x := 0; y := 1;$ **for** k **from** 0 **to** $(N-1)$ **do** $y := y + h \cdot 2 \cdot x \cdot y : x := x + h : print(x, y)$: **od**:

$x := 0$

$y := 1$

0.1, 1.

0.2, 1.02

0.3, 1.0608

0.4, 1.124448

0.5, 1.21440384

0.6, 1.335844224

0.7, 1.496145531

0.8, 1.705605905

0.9, 1.978502850

1.0, 2.334633363 **(15)**

> $x := 0; y := 1;$ **for** k **from** 0 **to** $(N-1)$ **do** $y := y + h \cdot x \cdot y + h \cdot (x + h) \cdot (y + h \cdot 2 \cdot x \cdot y) : x := x + h : print(x, y)$: **od**:

$x := 0$

$y := 1$

0.1, 1.01

0.2, 1.040704

0.3, 1.093988045

0.4, 1.173192779

0.5, 1.283472900

0.6, 1.432355756

0.7, 1.630593792

0.8, 1.893445511

0.9, 2.242596863

1.0, 2.709057011 **(16)**

> abs(1.21440384 − 1.283472900)

0.069069060 **(17)**

> $de1 := diff(y(x), x) = y(x)^2 + x^2$; $sol1 := dsolve(\{de1, y(0) = 1\}, y(x))$; $h := 0.1$; $N := \frac{2}{h}$;

$$de1 := \frac{d}{dx} y(x) = y(x)^2 + x^2$$

$$sol1 := y(x)$$

$$= \begin{cases} \dfrac{\left(\dfrac{\mathrm{BesselJ}\left(-\frac{3}{4}, \frac{x^2}{2}\right)\left(\Gamma\left(\frac{3}{4}\right)^2 + \pi\right)}{\Gamma\left(\frac{3}{4}\right)^2} - \mathrm{BesselY}\left(-\frac{3}{4}, \frac{x^2}{2}\right) \right) x}{-\dfrac{\left(\Gamma\left(\frac{3}{4}\right)^2 + \pi\right)\mathrm{BesselJ}\left(\frac{1}{4}, \frac{x^2}{2}\right)}{\Gamma\left(\frac{3}{4}\right)^2} + \mathrm{BesselY}\left(\frac{1}{4}, \frac{x^2}{2}\right)} & x < 0 \\ 1 & x = 0 \\ \dfrac{\left(\dfrac{\mathrm{BesselJ}\left(-\frac{3}{4}, \frac{x^2}{2}\right)\left(\Gamma\left(\frac{3}{4}\right)^2 - \pi\right)}{\Gamma\left(\frac{3}{4}\right)^2} - \mathrm{BesselY}\left(-\frac{3}{4}, \frac{x^2}{2}\right) \right) x}{-\dfrac{\left(\Gamma\left(\frac{3}{4}\right)^2 - \pi\right)\mathrm{BesselJ}\left(\frac{1}{4}, \frac{x^2}{2}\right)}{\Gamma\left(\frac{3}{4}\right)^2} + \mathrm{BesselY}\left(\frac{1}{4}, \frac{x^2}{2}\right)} & 0 < x \end{cases}$$

$$h := 0.1$$

$$N := 20.$$ **(18)**

> $x := 0; y := 0;$ **for** k **from** 0 **to** $(N-1)$ **do** $y := y + h \cdot \left(y^2 + x^2\right) : x := x + h : print(x, y)$: **od**:

$$x := 0$$

$$y := 0$$

0.1, 0.

0.2, 0.001

0.3, 0.0050001

0.4, 0.01400260010

0.5, 0.03002220738

0.6, 0.05511234067

0.7, 0.09141607768

0.8, 0.1412517676

0.9, 0.2072469738

1.0, 0.2925421046

1.1, 0.4011001929

1.2, 0.5381883294

1.3, 0.7111529972

1.4, 0.9307268557

1.5, 1.213352104

1.6, 1.585574437

1.7, 2.092979066

1.8, 2.820035203

1.9, 3.939295058

2.0, 5.852099613 **(19)**

> $x := 0; y := 0;$ **for** k **from** 0 **to** $(N-1)$ **do** $y := y + \frac{h}{2} \cdot \left(x^2 + y^2\right) + h \cdot (x+h) \cdot \left(y + \frac{h}{2} \cdot \left(x^2 + y^2\right)\right) : x := x + h : print(x, y)$: **od**:

$x := 0$

$y := 0$

0.1, 0.

0.2, 0.0005100000000

0.3, 0.002585313395

0.4, 0.007369073490

0.5, 0.01614037808

0.6, 0.03037260789

0.7, 0.05180804394

0.8, 0.08255762742

0.9, 0.1252392729

1.0, 0.1831758684

1.1, 0.2606874276

1.2, 0.3635355633

1.3, 0.4996221195

1.4, 0.6801276852

1.5, 0.9214448239

1.6, 1.248621508

1.7, 1.701851922

1.8, 2.349576966

1.9, 3.317247049

2.0, 4.857544138 **(20)**

>