Batch 1:

1. Call: 2.13337, Put: 5.84628
2. Parity is satisfied.

Batch 2:

1. Call: 7.96557, Put: 7.96557
2. Parity is satisfied.

Batch 3:

1. Call: 0.204058, Put: 4.07326
2. Parity is satisfied.

Batch 4:

1. Call: 92.1757, Put: 1.2475
2. Parity is satisfied.

For Batch 1:

1. For a monotonically increasing range of underlying values of S, for example 10, 11, 12, …, 50, the call prices are:

S=10, 7.792e-36

S=11, 1.88964e-32

S=12, 1.64204e-29

S=13, 6.19303e-27

S=14, 1.17207e-24

S=15, 1.24529e-22

S=16, 8.11387e-21

S=17, 3.47944e-19

S=18, 1.03991e-17

S=19, 2.27042e-16

S=20, 3.76503e-15

S=21, 4.89964e-14

S=22, 5.1436e-13

S=23, 4.45934e-12

S=24, 3.25772e-11

S=25, 2.0405e-10

S=26, 1.11246e-09

S=27, 5.34891e-09

S=28, 2.29454e-08

S=29, 8.8713e-08

S=30, 3.11926e-07

S=31, 1.00545e-06

S=32, 2.99241e-06

S=33, 8.27565e-06

S=34, 2.13896e-05

S=35, 5.19359e-05

S=36, 0.000119024

S=37, 0.000258548

S=38, 0.000534403

S=39, 0.00105474

S=40, 0.00199417

S=41, 0.00362244

S=42, 0.00633924

S=43, 0.010714

S=44, 0.0175282

S=45, 0.0278174

S=46, 0.0429083

S=47, 0.0644467

S=48, 0.0944125

S=49, 0.135117

S=50, 0.189181

1. For a monotonically increasing range of underlying values of T, for example 0.01, 0.02, …, 0.25, the call prices are:

0.00240072

0.0333777

0.0962183

0.177371

0.268253

0.364208

0.462661

0.562136

0.661761

0.761015

0.859578

0.95726

1.05395

1.14959

1.24415

1.33762

1.43002

1.52136

1.61167

1.70096

1.78928

1.87665

1.9631

2.04867

2.13337

For a monotonically increasing range of underlying values of sig, for example 0.01, 0.02, …, 0.30, the call prices are:

4.06939e-35

9.4101e-11

6.54342e-06

0.000468989

0.00418317

0.0156877

0.0380993

0.0722932

0.117694

0.173097

0.237149

0.30857

0.386235

0.469188

0.556628

0.647891

0.742427

0.839776

0.939559

1.04145

1.14519

1.25055

1.35734

1.46538

1.57454

1.6847

1.79574

1.90759

2.02016

2.13337

Option Sensitivities, aka the Greeks(a) Delta Call: 0.594629, Delta Put: -0.356601, Gamma: 0.0134936

(b) For a monotonically increasing range of underlying values of S, for example 10, 11, 12, …, 50, the call deltas are:

S=10, 2.25551e-19

S=11, 6.18174e-18

S=12, 1.12536e-16

S=13, 1.46673e-15

S=14, 1.44882e-14

S=15, 1.1336e-13

S=16, 7.27491e-13

S=17, 3.93787e-12

S=18, 1.83921e-11

S=19, 7.55191e-11

S=20, 2.76878e-10

S=21, 9.18317e-10

S=22, 2.78591e-09

S=23, 7.80377e-09

S=24, 2.0348e-08

S=25, 4.97346e-08

S=26, 1.14647e-07

S=27, 2.50577e-07

S=28, 5.21714e-07

S=29, 1.03903e-06

S=30, 1.98667e-06

S=31, 3.65877e-06

S=32, 6.5092e-06

S=33, 1.1216e-05

S=34, 1.87624e-05

S=35, 3.05351e-05

S=36, 4.84406e-05

S=37, 7.50367e-05

S=38, 0.00011368

S=39, 0.000168682

S=40, 0.000245471

S=41, 0.000350761

S=42, 0.000492699

S=43, 0.000681019

S=44, 0.000927157

S=45, 0.00124435

S=46, 0.00164771

S=47, 0.00215423

S=48, 0.00278276

S=49, 0.00355398

S=50, 0.00449025

(c) For a monotonically increasing range of underlying values of T, for example 0.01, 0.02, …, 0.25, the call deltas are:

0.914253

0.835716

0.789704

0.759232

0.737278

0.720538

0.707249

0.696377

0.687274

0.67951

0.672785

0.666887

0.661659

0.656981

0.652763

0.648932

0.64543

0.642213

0.639242

0.636486

0.633918

0.631518

0.629266

0.627146

0.625146

For a monotonically increasing range of underlying values of sig, for example 0.01, 0.02, …, 0.30, the call deltas are:

0.951229

0.95097

0.94131

0.912224

0.874079

0.836361

0.802707

0.773803

0.749288

0.72853

0.710897

0.695846

0.682924

0.67177

0.662089

0.653647

0.646253

0.639751

0.634016

0.628942

0.624442

0.620445

0.616887

0.613718

0.610894

0.608377

0.606134

0.604137

0.602361

0.600786

(d)

When h = 1:

Call Delta: 0.59458

Put Delta: -0.356649

Gamma: 0.0134928

For a monotonically increasing range of underlying values of S, for example 70, 71, …, 105, the call deltas are:

S=70, 0.0965014

S=71, 0.10623

S=72, 0.116492

S=73, 0.127274

S=74, 0.138563

S=75, 0.150343

S=76, 0.162593

S=77, 0.175291

S=78, 0.188415

S=79, 0.201936

S=80, 0.215829

S=81, 0.230063

S=82, 0.244608

S=83, 0.259434

S=84, 0.274507

S=85, 0.289795

S=86, 0.305266

S=87, 0.320886

S=88, 0.336624

S=89, 0.352447

S=90, 0.368323

S=91, 0.384221

S=92, 0.400112

S=93, 0.415967

S=94, 0.431757

S=95, 0.447456

S=96, 0.463038

S=97, 0.478481

S=98, 0.49376

S=99, 0.508856

S=100, 0.523748

S=101, 0.538419

S=102, 0.552852

S=103, 0.567032

S=104, 0.580945

S=105, 0.59458

When h = 0.1:

Call Delta: 0.594628

Put Delta: -0.356601

Gamma: 0.0134936

For a monotonically increasing range of underlying values of S, for example 70, 71, …, 105, the call deltas are:

S=70, 0.0964121

S=71, 0.106142

S=72, 0.116406

S=73, 0.12719

S=74, 0.138482

S=75, 0.150265

S=76, 0.162519

S=77, 0.175221

S=78, 0.188349

S=79, 0.201875

S=80, 0.215772

S=81, 0.230012

S=82, 0.244562

S=83, 0.259393

S=84, 0.274471

S=85, 0.289765

S=86, 0.305241

S=87, 0.320867

S=88, 0.33661

S=89, 0.352438

S=90, 0.368319

S=91, 0.384223

S=92, 0.400118

S=93, 0.415977

S=94, 0.431772

S=95, 0.447475

S=96, 0.463062

S=97, 0.478508

S=98, 0.493791

S=99, 0.50889

S=100, 0.523785

S=101, 0.538458

S=102, 0.552894

S=103, 0.567076

S=104, 0.580992

S=105, 0.594628

When h = 0.01:

Call Delta: 0.594629

Put Delta: -0.356601

Gamma: 0.0134936

For a monotonically increasing range of underlying values of S, for example 70, 71, …, 105, the call deltas are:

S=70, 0.0964112

S=71, 0.106142

S=72, 0.116405

S=73, 0.127189

S=74, 0.138482

S=75, 0.150264

S=76, 0.162518

S=77, 0.17522

S=78, 0.188348

S=79, 0.201874

S=80, 0.215772

S=81, 0.230011

S=82, 0.244562

S=83, 0.259392

S=84, 0.274471

S=85, 0.289765

S=86, 0.305241

S=87, 0.320867

S=88, 0.33661

S=89, 0.352438

S=90, 0.368319

S=91, 0.384223

S=92, 0.400118

S=93, 0.415977

S=94, 0.431772

S=95, 0.447475

S=96, 0.463062

S=97, 0.478508

S=98, 0.493791

S=99, 0.50889

S=100, 0.523785

S=101, 0.538459

S=102, 0.552894

S=103, 0.567076

S=104, 0.580992

S=105, 0.594629