

$\ln[\sigma] := \sigma = 6 / 5$

```
(*simulator_extended_stabilizer*)
ZeroZeroFirst10simulatorextendedstabilizer = 1985
ZeroOneFirst10simulatorextendedstabilizer = 1989
OneZeroFirst10simulatorextendedstabilizer = 4191
OneOneFirst10simulatorextendedstabilizer = 27

ZeroZeroFirst08simulatorextendedstabilizer = 1948
ZeroOneFirst08simulatorextendedstabilizer = 2296
OneZeroFirst08simulatorextendedstabilizer = 3865
OneOneFirst08simulatorextendedstabilizer = 83

ZeroZeroFirst06simulatorextendedstabilizer = 1779
ZeroOneFirst06simulatorextendedstabilizer = 2985
OneZeroFirst06simulatorextendedstabilizer = 3212
OneOneFirst06simulatorextendedstabilizer = 216

ZeroZeroFirst04simulatorextendedstabilizer = 1470
ZeroOneFirst04simulatorextendedstabilizer = 4070
OneZeroFirst04simulatorextendedstabilizer = 2328
OneOneFirst04simulatorextendedstabilizer = 324

ZeroZeroFirst02simulatorextendedstabilizer = 1209
ZeroOneFirst02simulatorextendedstabilizer = 4793
OneZeroFirst02simulatorextendedstabilizer = 1714
OneOneFirst02simulatorextendedstabilizer = 476

ZeroZeroFirst00simulatorextendedstabilizer = 1284
ZeroOneFirst00simulatorextendedstabilizer = 4967
OneZeroFirst00simulatorextendedstabilizer = 1398
OneOneFirst00simulatorextendedstabilizer = 543

ZeroZeroSecond02simulatorextendedstabilizer = 1235
ZeroOneSecond02simulatorextendedstabilizer = 4789
OneZeroSecond02simulatorextendedstabilizer = 1692
OneOneSecond02simulatorextendedstabilizer = 476

ZeroZeroSecond04simulatorextendedstabilizer = 1520
ZeroOneSecond04simulatorextendedstabilizer = 3934
OneZeroSecond04simulatorextendedstabilizer = 2432
OneOneSecond04simulatorextendedstabilizer = 306

ZeroZeroSecond06simulatorextendedstabilizer = 1817
ZeroOneSecond06simulatorextendedstabilizer = 3045
OneZeroSecond06simulatorextendedstabilizer = 3133
OneOneSecond06simulatorextendedstabilizer = 197

ZeroZeroSecond08simulatorextendedstabilizer = 1906
ZeroOneSecond08simulatorextendedstabilizer = 2383
OneZeroSecond08simulatorextendedstabilizer = 3818
```

OneOneSecond08simulatorextendedstabilizer = 85

ZeroZeroSecond10simulatorextendedstabilizer = 1985

ZeroOneSecond10simulatorextendedstabilizer = 1989

OneZeroSecond10simulatorextendedstabilizer = 4191

OneOneSecond10simulatorextendedstabilizer = 27

CosSqsimulatorextendedstabilizer =  $\{ \{-1 * \pi, \text{ZeroZeroSecond10simulatorextendedstabilizer} / (\text{OneZeroSecond10simulatorextendedstabilizer} + \text{ZeroZeroSecond10simulatorextendedstabilizer})\},$   
 $\{-0.8 * \pi, \text{ZeroZeroSecond08simulatorextendedstabilizer} / (\text{OneZeroSecond08simulatorextendedstabilizer} + \text{ZeroZeroSecond08simulatorextendedstabilizer})\},$   
 $\{-0.6 * \pi, \text{ZeroZeroSecond06simulatorextendedstabilizer} / (\text{OneZeroSecond06simulatorextendedstabilizer} + \text{ZeroZeroSecond06simulatorextendedstabilizer})\},$   
 $\{-0.4 * \pi, \text{ZeroZeroSecond04simulatorextendedstabilizer} / (\text{OneZeroSecond04simulatorextendedstabilizer} + \text{ZeroZeroSecond04simulatorextendedstabilizer})\},$   
 $\{-0.2 * \pi, \text{ZeroZeroSecond02simulatorextendedstabilizer} / (\text{OneZeroSecond02simulatorextendedstabilizer} + \text{ZeroZeroSecond02simulatorextendedstabilizer})\},$   
 $\{0.0 * \pi, \text{ZeroZeroFirst00simulatorextendedstabilizer} / (\text{OneZeroFirst00simulatorextendedstabilizer} + \text{ZeroZeroFirst00simulatorextendedstabilizer})\},$   
 $\{0.2 * \pi, \text{ZeroZeroFirst02simulatorextendedstabilizer} / (\text{OneZeroFirst02simulatorextendedstabilizer} + \text{ZeroZeroFirst02simulatorextendedstabilizer})\},$   
 $\{0.4 * \pi, \text{ZeroZeroFirst04simulatorextendedstabilizer} / (\text{OneZeroFirst04simulatorextendedstabilizer} + \text{ZeroZeroFirst04simulatorextendedstabilizer})\},$   
 $\{0.6 * \pi, \text{ZeroZeroFirst06simulatorextendedstabilizer} / (\text{OneZeroFirst06simulatorextendedstabilizer} + \text{ZeroZeroFirst06simulatorextendedstabilizer})\},$   
 $\{0.8 * \pi, \text{ZeroZeroFirst08simulatorextendedstabilizer} / (\text{OneZeroFirst08simulatorextendedstabilizer} + \text{ZeroZeroFirst08simulatorextendedstabilizer})\},$   
 $\{1 * \pi, \text{ZeroZeroFirst10simulatorextendedstabilizer} / (\text{OneZeroFirst10simulatorextendedstabilizer} + \text{ZeroZeroFirst10simulatorextendedstabilizer})\} \}$

Decisivenesssimulatorextendedstabilizer =

$\{ \{-1 * \pi, (\text{OneZeroSecond10simulatorextendedstabilizer} + \text{ZeroZeroSecond10simulatorextendedstabilizer}) / 8192\},$   
 $\{-0.8 * \pi, (\text{OneZeroSecond08simulatorextendedstabilizer} + \text{ZeroZeroSecond08simulatorextendedstabilizer}) / 8192\},$   
 $\{-0.6 * \pi, (\text{OneZeroSecond06simulatorextendedstabilizer} + \text{ZeroZeroSecond06simulatorextendedstabilizer}) / 8192\},$

```

{-0.4 *  $\pi$ , (OneZeroSecond04simulatorextendedstabilizer +
  ZeroZeroSecond04simulatorextendedstabilizer) / 8192},
{-0.2 *  $\pi$ , (OneZeroSecond02simulatorextendedstabilizer +
  ZeroZeroSecond02simulatorextendedstabilizer) / 8192},
{-0.0 *  $\pi$ , (OneZeroFirst00simulatorextendedstabilizer +
  ZeroZeroFirst00simulatorextendedstabilizer) / 8192},
{0.2 *  $\pi$ , (OneZeroFirst02simulatorextendedstabilizer +
  ZeroZeroFirst02simulatorextendedstabilizer) / 8192},
{0.4 *  $\pi$ , (OneZeroFirst04simulatorextendedstabilizer +
  ZeroZeroFirst04simulatorextendedstabilizer) / 8192},
{0.6 *  $\pi$ , (OneZeroFirst06simulatorextendedstabilizer +
  ZeroZeroFirst06simulatorextendedstabilizer) / 8192},
{0.8 *  $\pi$ , (OneZeroFirst08simulatorextendedstabilizer +
  ZeroZeroFirst08simulatorextendedstabilizer) / 8192},
{1.0 *  $\pi$ , (OneZeroFirst10simulatorextendedstabilizer +
  ZeroZeroFirst10simulatorextendedstabilizer) / 8192}}
ExpCosSqsimulatorextendedstabilizer = ListPlot[CosSqsimulatorextendedstabilizer]
ExpDecisivenesssimulatorextendedstabilizer =
  ListPlot[Decisivenesssimulatorextendedstabilizer]

```

```

Out[ ] =  $\frac{6}{5}$ 
Out[ ] = 1985
Out[ ] = 1989
Out[ ] = 4191
Out[ ] = 27
Out[ ] = 1948
Out[ ] = 2296
Out[ ] = 3865
Out[ ] = 83
Out[ ] = 1779
Out[ ] = 2985
Out[ ] = 3212
Out[ ] = 216
Out[ ] = 1470
Out[ ] = 4070
Out[ ] = 2328
Out[ ] = 324
Out[ ] = 1209

```

$Out[\#]= 4793$

$Out[\#]= 1714$

$Out[\#]= 476$

$Out[\#]= 1284$

$Out[\#]= 4967$

$Out[\#]= 1398$

$Out[\#]= 543$

$Out[\#]= 1235$

$Out[\#]= 4789$

$Out[\#]= 1692$

$Out[\#]= 476$

$Out[\#]= 1520$

$Out[\#]= 3934$

$Out[\#]= 2432$

$Out[\#]= 306$

$Out[\#]= 1817$

$Out[\#]= 3045$

$Out[\#]= 3133$

$Out[\#]= 197$

$Out[\#]= 1906$

$Out[\#]= 2383$

$Out[\#]= 3818$

$Out[\#]= 85$

$Out[\#]= 1985$

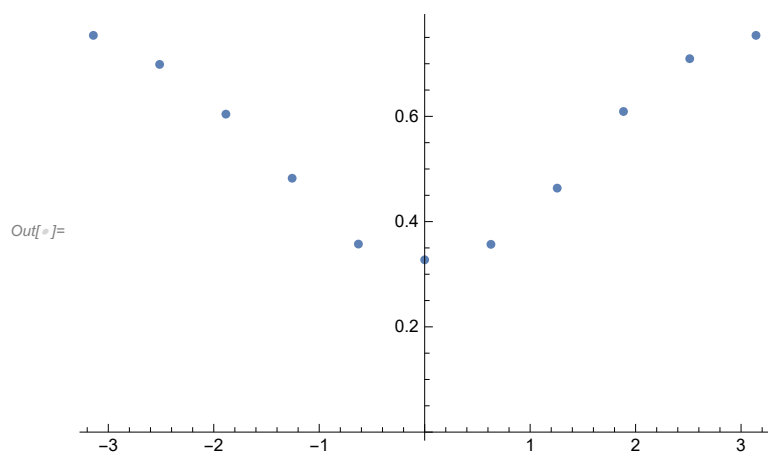
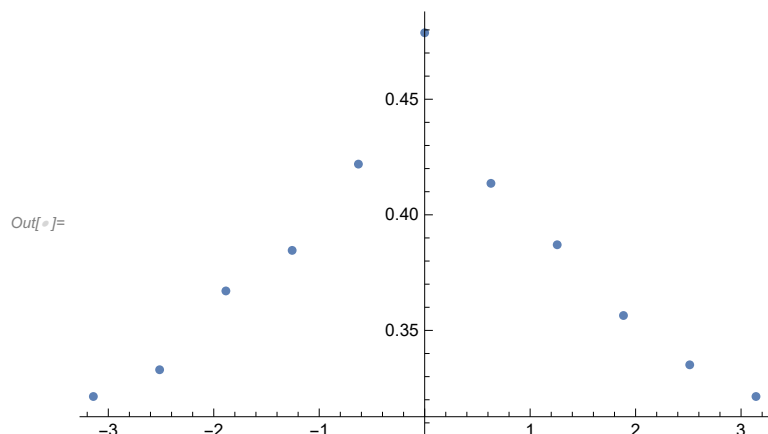
$Out[\#]= 1989$

$Out[\#]= 4191$

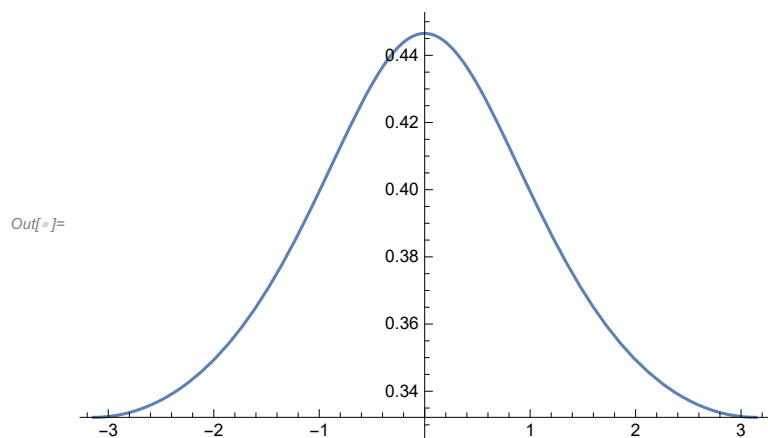
$Out[\#]= 27$

$Out[\#]= \left\{ \left\{ -\pi, \frac{1985}{6176} \right\}, \left\{ -2.51327, \frac{953}{2862} \right\}, \left\{ -1.88496, \frac{1817}{4950} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{5}{13} \right\}, \left\{ -0.628319, \frac{1235}{2927} \right\}, \left\{ 0., \frac{214}{447} \right\}, \left\{ 0.628319, \frac{1209}{2923} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{245}{633} \right\}, \left\{ 1.88496, \frac{1779}{4991} \right\}, \left\{ 2.51327, \frac{1948}{5813} \right\}, \left\{ \pi, \frac{1985}{6176} \right\} \right\}$

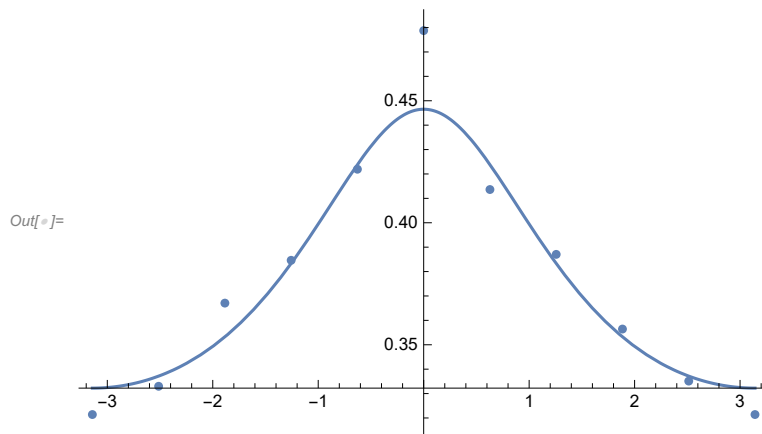
Out[ ]:=  $\left\{ \left\{ -\pi, \frac{193}{256} \right\}, \left\{ -2.51327, \frac{1431}{2048} \right\}, \left\{ -1.88496, \frac{2475}{4096} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{247}{512} \right\}, \left\{ -0.628319, \frac{2927}{8192} \right\}, \left\{ 0., \frac{1341}{4096} \right\}, \left\{ 0.628319, \frac{2923}{8192} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1899}{4096} \right\}, \left\{ 1.88496, \frac{4991}{8192} \right\}, \left\{ 2.51327, \frac{5813}{8192} \right\}, \left\{ 3.14159, \frac{193}{256} \right\} \right\}$



In[ ]:= **cosTH = Plot**[1 - N[cosThirdFunction[-x, 6 / 5,  $\pi/2 - 1$ , 1]], {x, - $\pi$ ,  $\pi$ }]

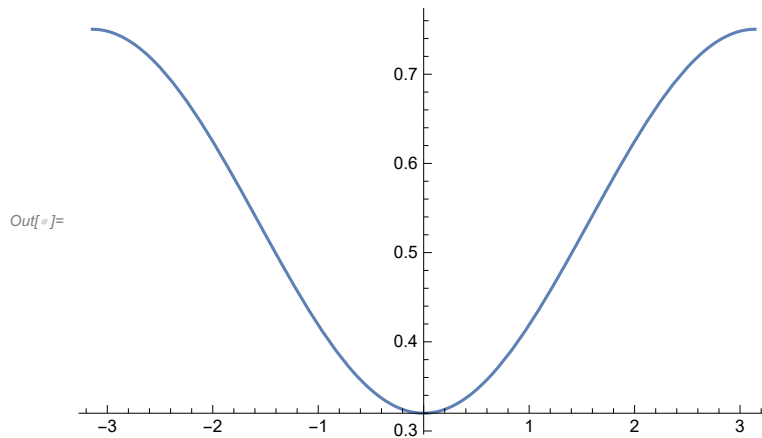


```
In[ ]:= Show[cosTH, ExpCosQsimulatorextendedstabilizer, PlotRange -> All]
```

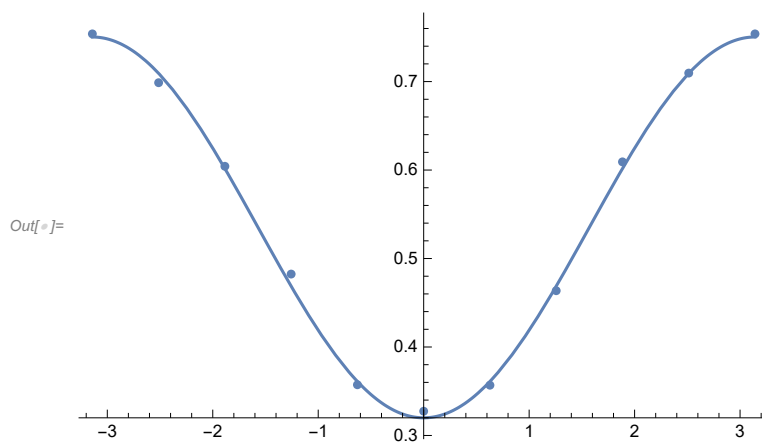


```
In[ ]:=
```

```
In[ ]:= decTH = Plot[DecisivenessThirdFunction[-x, 6/5,  $\pi/2 - 1$ , 2], {x, - $\pi$ ,  $\pi$ }]
```



```
In[ ]:= Show[decTH, ExpDecisivenesssimulatorextendedstabilizer, PlotRange -> All]
```



```
In[ ]:= (*simulator_mps*)
```

```
ZeroZeroFirst10simulatormps = 2048
```

```
ZeroOneFirst10simulatormps = 1986
```

```
OneZeroFirst10simulatormps = 4136
```

OneOneFirst10simulatoremps = 22

ZeroZeroFirst08simulatoremps = 2006

ZeroOneFirst08simulatoremps = 2254

OneZeroFirst08simulatoremps = 3864

OneOneFirst08simulatoremps = 68

ZeroZeroFirst06simulatoremps = 1749

ZeroOneFirst06simulatoremps = 3090

OneZeroFirst06simulatoremps = 3156

OneOneFirst06simulatoremps = 197

ZeroZeroFirst04simulatoremps = 1435

ZeroOneFirst04simulatoremps = 3951

OneZeroFirst04simulatoremps = 2463

OneOneFirst04simulatoremps = 343

ZeroZeroFirst02simulatoremps = 1237

ZeroOneFirst02simulatoremps = 4741

OneZeroFirst02simulatoremps = 1765

OneOneFirst02simulatoremps = 449

ZeroZeroFirst00simulatoremps = 1151

ZeroOneFirst00simulatoremps = 5118

OneZeroFirst00simulatoremps = 1396

OneOneFirst00simulatoremps = 527

ZeroZeroSecond02simulatoremps = 1309

ZeroOneSecond02simulatoremps = 4722

OneZeroSecond02simulatoremps = 1671

OneOneSecond02simulatoremps = 490

ZeroZeroSecond04simulatoremps = 1513

ZeroOneSecond04simulatoremps = 4018

OneZeroSecond04simulatoremps = 2286

OneOneSecond04simulatoremps = 375

ZeroZeroSecond06simulatoremps = 1721

ZeroOneSecond06simulatoremps = 3076

OneZeroSecond06simulatoremps = 3216

OneOneSecond06simulatoremps = 179

ZeroZeroSecond08simulatoremps = 1972

ZeroOneSecond08simulatoremps = 2309

OneZeroSecond08simulatoremps = 3837

OneOneSecond08simulatoremps = 74

ZeroZeroSecond10simulatoremps = 2048

ZeroOneSecond10simulatoremps = 1986

OneZeroSecond10simulatoremps = 4136

OneOneSecond10simulatoremps = 22

```

CosSqsimulatormps = { {-1 *  $\pi$ , ZeroZeroSecond10simulatormps /
  (OneZeroSecond10simulatormps + ZeroZeroSecond10simulatormps)},
  {-0.8 *  $\pi$ , ZeroZeroSecond08simulatormps /
  (OneZeroSecond08simulatormps + ZeroZeroSecond08simulatormps)},
  {-0.6 *  $\pi$ , ZeroZeroSecond06simulatormps /
  (OneZeroSecond06simulatormps + ZeroZeroSecond06simulatormps)},
  {-0.4 *  $\pi$ , ZeroZeroSecond04simulatormps /
  (OneZeroSecond04simulatormps + ZeroZeroSecond04simulatormps)},
  {-0.2 *  $\pi$ , ZeroZeroSecond02simulatormps /
  (OneZeroSecond02simulatormps + ZeroZeroSecond02simulatormps)},
  {0.0 *  $\pi$ , ZeroZeroFirst00simulatormps / (OneZeroFirst00simulatormps +
    ZeroZeroFirst00simulatormps)}, {0.2 *  $\pi$ , ZeroZeroFirst02simulatormps /
  (OneZeroFirst02simulatormps + ZeroZeroFirst02simulatormps)},
  {0.4 *  $\pi$ , ZeroZeroFirst04simulatormps / (OneZeroFirst04simulatormps +
    ZeroZeroFirst04simulatormps)}, {0.6 *  $\pi$ , ZeroZeroFirst06simulatormps /
  (OneZeroFirst06simulatormps + ZeroZeroFirst06simulatormps)},
  {0.8 *  $\pi$ , ZeroZeroFirst08simulatormps / (OneZeroFirst08simulatormps +
    ZeroZeroFirst08simulatormps)}, {1 *  $\pi$ , ZeroZeroFirst10simulatormps /
  (OneZeroFirst10simulatormps + ZeroZeroFirst10simulatormps)} }
Decisivenesssimulatormps = { {-1 *  $\pi$ ,
  (OneZeroSecond10simulatormps + ZeroZeroSecond10simulatormps) / 8192},
  {-0.8 *  $\pi$ , (OneZeroSecond08simulatormps + ZeroZeroSecond08simulatormps) / 8192},
  {-0.6 *  $\pi$ , (OneZeroSecond06simulatormps + ZeroZeroSecond06simulatormps) / 8192},
  {-0.4 *  $\pi$ , (OneZeroSecond04simulatormps + ZeroZeroSecond04simulatormps) / 8192},
  {-0.2 *  $\pi$ , (OneZeroSecond02simulatormps + ZeroZeroSecond02simulatormps) / 8192},
  {-0.0 *  $\pi$ , (OneZeroFirst00simulatormps + ZeroZeroFirst00simulatormps) / 8192},
  {0.2 *  $\pi$ , (OneZeroFirst02simulatormps + ZeroZeroFirst02simulatormps) / 8192},
  {0.4 *  $\pi$ , (OneZeroFirst04simulatormps + ZeroZeroFirst04simulatormps) / 8192},
  {0.6 *  $\pi$ , (OneZeroFirst06simulatormps + ZeroZeroFirst06simulatormps) / 8192},
  {0.8 *  $\pi$ , (OneZeroFirst08simulatormps + ZeroZeroFirst08simulatormps) / 8192},
  {1.0 *  $\pi$ , (OneZeroFirst10simulatormps + ZeroZeroFirst10simulatormps) / 8192} }
ExpCosSqsimulatormps = ListPlot[CosSqsimulatormps]
ExpDecisivenesssimulatormps = ListPlot[Decisivenesssimulatormps]

```

Out[ ]= 2048

Out[ ]= 1986

Out[ ]= 4136

Out[ ]= 22

Out[ ]= 2006

Out[ ]= 2254

Out[ ]= 3864

Out[ ]= 68



Out[ ]= 1749

Out[ ]= 3090

Out[ ]= 3156

Out[ ]= 197

Out[ ]= 1435

Out[ ]= 3951

Out[ ]= 2463

Out[ ]= 343

Out[ ]= 1237

Out[ ]= 4741

Out[ ]= 1765

Out[ ]= 449

Out[ ]= 1151

Out[ ]= 5118

Out[ ]= 1396

Out[ ]= 527

Out[ ]= 1309

Out[ ]= 4722

Out[ ]= 1671

Out[ ]= 490

Out[ ]= 1513

Out[ ]= 4018

Out[ ]= 2286

Out[ ]= 375

Out[ ]= 1721

Out[ ]= 3076

Out[ ]= 3216

Out[ ]= 179

Out[ ]= 1972

Out[ ]= 2309

Out[ ]= 3837

Out[ ]= 74

Out[ ]= 2048

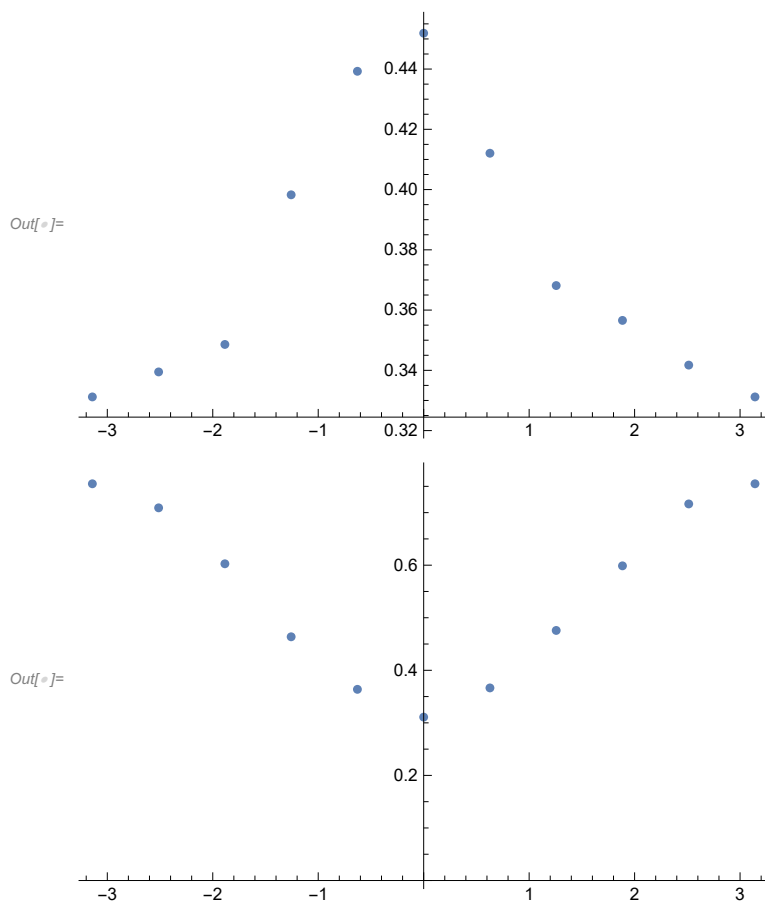
Out[ ]= 1986

Out[ ]= 4136

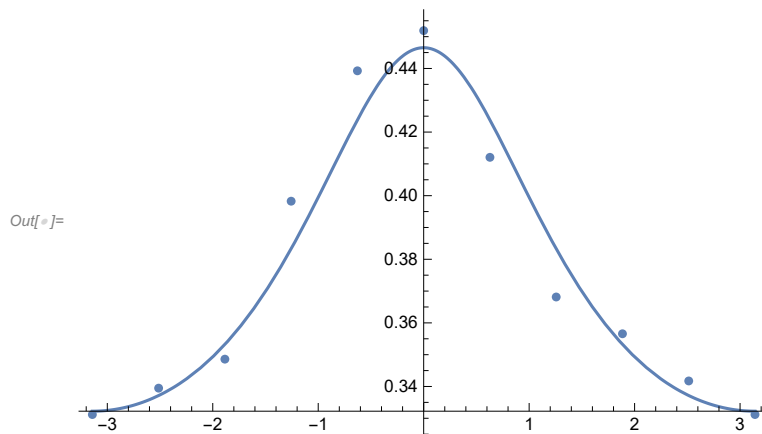
Out[ ]= 22

Out[ ]=  $\left\{ \left\{ -\pi, \frac{256}{773} \right\}, \left\{ -2.51327, \frac{1972}{5809} \right\}, \left\{ -1.88496, \frac{1721}{4937} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{1513}{3799} \right\}, \left\{ -0.628319, \frac{1309}{2980} \right\}, \left\{ 0., \frac{1151}{2547} \right\}, \left\{ 0.628319, \frac{1237}{3002} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1435}{3898} \right\}, \left\{ 1.88496, \frac{583}{1635} \right\}, \left\{ 2.51327, \frac{1003}{2935} \right\}, \left\{ \pi, \frac{256}{773} \right\} \right\}$

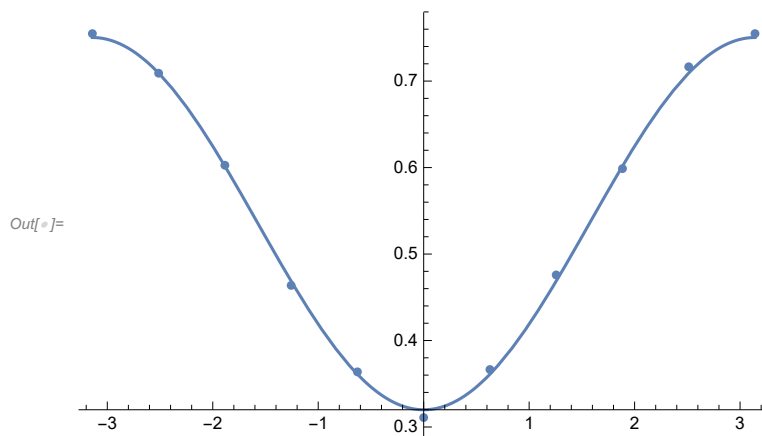
Out[ ]=  $\left\{ \left\{ -\pi, \frac{773}{1024} \right\}, \left\{ -2.51327, \frac{5809}{8192} \right\}, \left\{ -1.88496, \frac{4937}{8192} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{3799}{8192} \right\}, \left\{ -0.628319, \frac{745}{2048} \right\}, \left\{ 0., \frac{2547}{8192} \right\}, \left\{ 0.628319, \frac{1501}{4096} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1949}{4096} \right\}, \left\{ 1.88496, \frac{4905}{8192} \right\}, \left\{ 2.51327, \frac{2935}{4096} \right\}, \left\{ 3.14159, \frac{773}{1024} \right\} \right\}$



In[ ]:= Show[cosTH, ExpCosSqsimulatormps, PlotRange → All]



In[ ]:= Show[decTH, ExpDecisivenesssimulatormps, PlotRange → All]



In[ ]:= (\*simulator\_statevector\*)

ZeroZeroFirst10simulatorstatevector = 2058

ZeroOneFirst10simulatorstatevector = 2031

OneZeroFirst10simulatorstatevector = 4069

OneOneFirst10simulatorstatevector = 34

ZeroZeroFirst08simulatorstatevector = 1925

ZeroOneFirst08simulatorstatevector = 2301

OneZeroFirst08simulatorstatevector = 3889

OneOneFirst08simulatorstatevector = 77

ZeroZeroFirst06simulatorstatevector = 1696

ZeroOneFirst06simulatorstatevector = 3076

OneZeroFirst06simulatorstatevector = 3193

OneOneFirst06simulatorstatevector = 227

ZeroZeroFirst04simulatorstatevector = 1501

ZeroOneFirst04simulatorstatevector = 3949

OneZeroFirst04simulatorstatevector = 2393

OneOneFirst04simulatorstatevector = 349

```

ZeroZeroFirst02simulatorstatevector = 1275
ZeroOneFirst02simulatorstatevector = 4758
OneZeroFirst02simulatorstatevector = 1655
OneOneFirst02simulatorstatevector = 504

```

```

ZeroZeroFirst00simulatorstatevector = 1159
ZeroOneFirst00simulatorstatevector = 5004
OneZeroFirst00simulatorstatevector = 1510
OneOneFirst00simulatorstatevector = 519

```

```

ZeroZeroSecond02simulatorstatevector = 1287
ZeroOneSecond02simulatorstatevector = 4796
OneZeroSecond02simulatorstatevector = 1654
OneOneSecond02simulatorstatevector = 455

```

```

ZeroZeroSecond04simulatorstatevector = 1508
ZeroOneSecond04simulatorstatevector = 3937
OneZeroSecond04simulatorstatevector = 2406
OneOneSecond04simulatorstatevector = 341

```

```

ZeroZeroSecond06simulatorstatevector = 1752
ZeroOneSecond06simulatorstatevector = 3052
OneZeroSecond06simulatorstatevector = 3194
OneOneSecond06simulatorstatevector = 194

```

```

ZeroZeroSecond08simulatorstatevector = 1923
ZeroOneSecond08simulatorstatevector = 2336
OneZeroSecond08simulatorstatevector = 3849
OneOneSecond08simulatorstatevector = 84

```

```

ZeroZeroSecond10simulatorstatevector = 2058
ZeroOneSecond10simulatorstatevector = 2031
OneZeroSecond10simulatorstatevector = 4069
OneOneSecond10simulatorstatevector = 34

```

```

CosSqsimulatorstatevector = { {-1 *  $\pi$ , ZeroZeroSecond10simulatorstatevector /
  (OneZeroSecond10simulatorstatevector + ZeroZeroSecond10simulatorstatevector)},
  {-0.8 *  $\pi$ , ZeroZeroSecond08simulatorstatevector /
  (OneZeroSecond08simulatorstatevector + ZeroZeroSecond08simulatorstatevector)},
  {-0.6 *  $\pi$ , ZeroZeroSecond06simulatorstatevector /
  (OneZeroSecond06simulatorstatevector + ZeroZeroSecond06simulatorstatevector)},
  {-0.4 *  $\pi$ , ZeroZeroSecond04simulatorstatevector /
  (OneZeroSecond04simulatorstatevector + ZeroZeroSecond04simulatorstatevector)},
  {-0.2 *  $\pi$ , ZeroZeroSecond02simulatorstatevector /
  (OneZeroSecond02simulatorstatevector + ZeroZeroSecond02simulatorstatevector)},
  {0.0 *  $\pi$ , ZeroZeroFirst00simulatorstatevector /
  (OneZeroFirst00simulatorstatevector + ZeroZeroFirst00simulatorstatevector)},
  {0.2 *  $\pi$ , ZeroZeroFirst02simulatorstatevector /
  (OneZeroFirst02simulatorstatevector + ZeroZeroFirst02simulatorstatevector)},
  {0.4 *  $\pi$ , ZeroZeroFirst04simulatorstatevector /

```

```

    (OneZeroFirst04simulatorstatevector + ZeroZeroFirst04simulatorstatevector) },
    {0.6 *  $\pi$ , ZeroZeroFirst06simulatorstatevector /
    (OneZeroFirst06simulatorstatevector + ZeroZeroFirst06simulatorstatevector) },
    {0.8 *  $\pi$ , ZeroZeroFirst08simulatorstatevector /
    (OneZeroFirst08simulatorstatevector + ZeroZeroFirst08simulatorstatevector) },
    {1 *  $\pi$ , ZeroZeroFirst10simulatorstatevector /
    (OneZeroFirst10simulatorstatevector + ZeroZeroFirst10simulatorstatevector) }}
Decisivenesssimulatorstatevector = { {-1 *  $\pi$ ,
    (OneZeroSecond10simulatorstatevector + ZeroZeroSecond10simulatorstatevector) / 8192},
    {-0.8 *  $\pi$ , (OneZeroSecond08simulatorstatevector + ZeroZeroSecond08simulatorstatevector) /
    8192}, {-0.6 *  $\pi$ ,
    (OneZeroSecond06simulatorstatevector + ZeroZeroSecond06simulatorstatevector) / 8192},
    {-0.4 *  $\pi$ , (OneZeroSecond04simulatorstatevector + ZeroZeroSecond04simulatorstatevector) /
    8192}, {-0.2 *  $\pi$ ,
    (OneZeroSecond02simulatorstatevector + ZeroZeroSecond02simulatorstatevector) / 8192},
    {-0.0 *  $\pi$ , (OneZeroFirst00simulatorstatevector + ZeroZeroFirst00simulatorstatevector) /
    8192}, {0.2 *  $\pi$ ,
    (OneZeroFirst02simulatorstatevector + ZeroZeroFirst02simulatorstatevector) / 8192},
    {0.4 *  $\pi$ , (OneZeroFirst04simulatorstatevector + ZeroZeroFirst04simulatorstatevector) /
    8192}, {0.6 *  $\pi$ ,
    (OneZeroFirst06simulatorstatevector + ZeroZeroFirst06simulatorstatevector) / 8192},
    {0.8 *  $\pi$ , (OneZeroFirst08simulatorstatevector + ZeroZeroFirst08simulatorstatevector) /
    8192}, {1.0 *  $\pi$ ,
    (OneZeroFirst10simulatorstatevector + ZeroZeroFirst10simulatorstatevector) / 8192} }
ExpCosSqsimulatorstatevector = ListPlot[CosSqsimulatorstatevector]
ExpDecisivenesssimulatorstatevector = ListPlot[Decisivenesssimulatorstatevector]

```

Out[ ]= 2058

Out[ ]= 2031

Out[ ]= 4069

Out[ ]= 34

Out[ ]= 1925

Out[ ]= 2301

Out[ ]= 3889

Out[ ]= 77

Out[ ]= 1696

Out[ ]= 3076

Out[ ]= 3193

Out[ ]= 227

Out[ ]= 1501

Out[ ]= 3949

*Out[ ]=* 2393

*Out[ ]=* 349

*Out[ ]=* 1275

*Out[ ]=* 4758

*Out[ ]=* 1655

*Out[ ]=* 504

*Out[ ]=* 1159

*Out[ ]=* 5004

*Out[ ]=* 1510

*Out[ ]=* 519

*Out[ ]=* 1287

*Out[ ]=* 4796

*Out[ ]=* 1654

*Out[ ]=* 455

*Out[ ]=* 1508

*Out[ ]=* 3937

*Out[ ]=* 2406

*Out[ ]=* 341

*Out[ ]=* 1752

*Out[ ]=* 3052

*Out[ ]=* 3194

*Out[ ]=* 194

*Out[ ]=* 1923

*Out[ ]=* 2336

*Out[ ]=* 3849

*Out[ ]=* 84

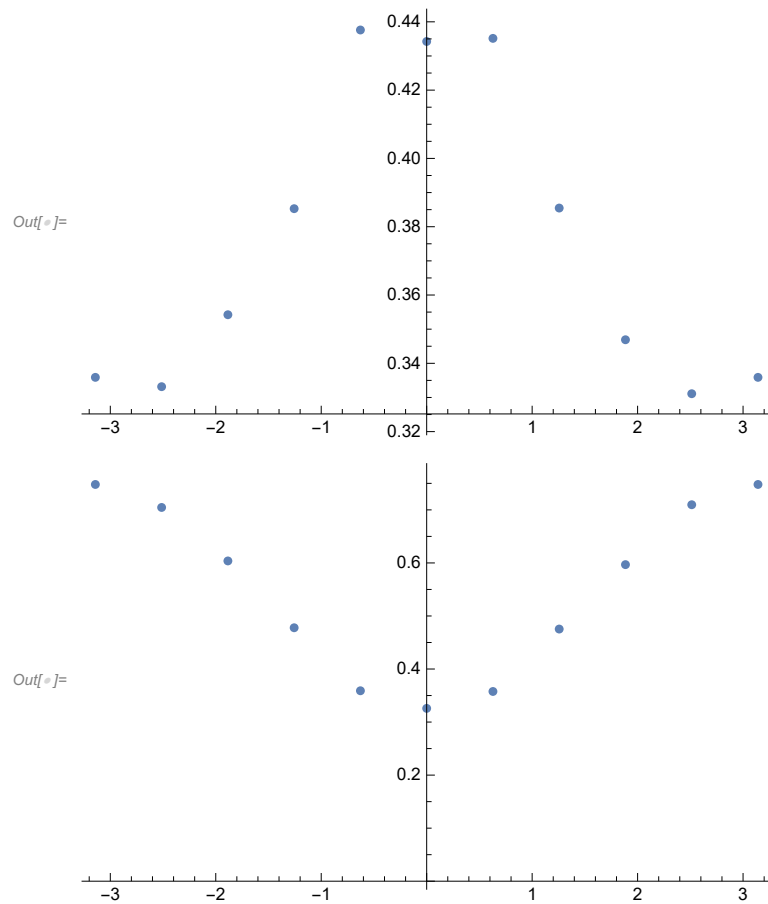
*Out[ ]=* 2058

*Out[ ]=* 2031

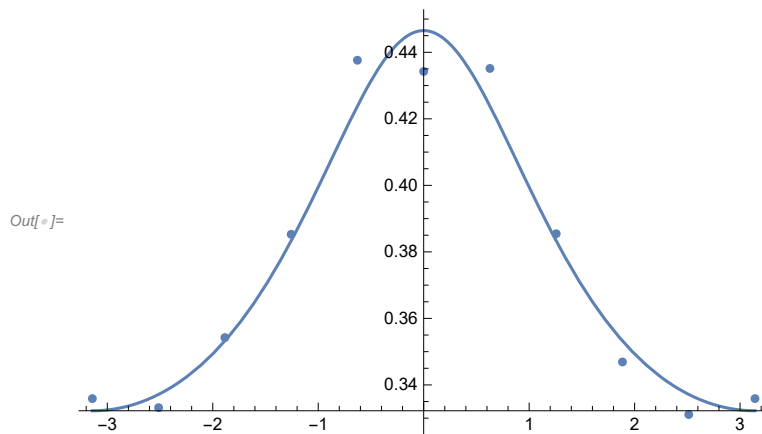
*Out[ ]=* 4069

*Out[ ]=* 34

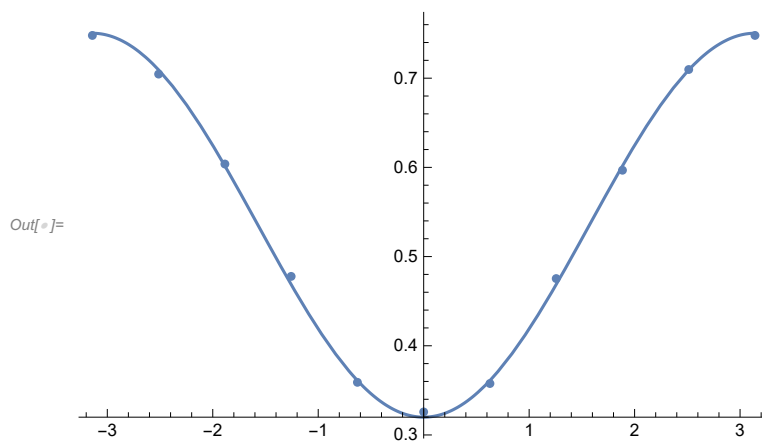
$$\begin{aligned}
 Out[ \# ] = & \left\{ \left\{ -\pi, \frac{2058}{6127} \right\}, \left\{ -2.51327, \frac{641}{1924} \right\}, \left\{ -1.88496, \frac{876}{2473} \right\}, \right. \\
 & \left\{ -1.25664, \frac{754}{1957} \right\}, \left\{ -0.628319, \frac{1287}{2941} \right\}, \left\{ 0., \frac{1159}{2669} \right\}, \left\{ 0.628319, \frac{255}{586} \right\}, \\
 & \left. \left\{ 1.25664, \frac{1501}{3894} \right\}, \left\{ 1.88496, \frac{1696}{4889} \right\}, \left\{ 2.51327, \frac{1925}{5814} \right\}, \left\{ \pi, \frac{2058}{6127} \right\} \right\} \\
 \\
 Out[ \# ] = & \left\{ \left\{ -\pi, \frac{6127}{8192} \right\}, \left\{ -2.51327, \frac{1443}{2048} \right\}, \left\{ -1.88496, \frac{2473}{4096} \right\}, \right. \\
 & \left\{ -1.25664, \frac{1957}{4096} \right\}, \left\{ -0.628319, \frac{2941}{8192} \right\}, \left\{ 0., \frac{2669}{8192} \right\}, \left\{ 0.628319, \frac{1465}{4096} \right\}, \\
 & \left. \left\{ 1.25664, \frac{1947}{4096} \right\}, \left\{ 1.88496, \frac{4889}{8192} \right\}, \left\{ 2.51327, \frac{2907}{4096} \right\}, \left\{ 3.14159, \frac{6127}{8192} \right\} \right\}
 \end{aligned}$$



```
In[ ]:= Show[cosTH, ExpCosSqsimulatorstatevector, PlotRange -> All]
```



```
In[ ]:= Show[decTH, ExpDecisivenesssimulatorstatevector, PlotRange -> All]
```



```
In[ ]:= (*ibm_nairobi*)
ZeroZeroFirst10ibmnairobi = 2330
ZeroOneFirst10ibmnairobi = 1962
OneZeroFirst10ibmnairobi = 3787
OneOneFirst10ibmnairobi = 113

ZeroZeroFirst08ibmnairobi = 2281
ZeroOneFirst08ibmnairobi = 2184
OneZeroFirst08ibmnairobi = 3569
OneOneFirst08ibmnairobi = 158

ZeroZeroFirst06ibmnairobi = 2214
ZeroOneFirst06ibmnairobi = 2705
OneZeroFirst06ibmnairobi = 2959
OneOneFirst06ibmnairobi = 314

ZeroZeroFirst04ibmnairobi = 2174
ZeroOneFirst04ibmnairobi = 3291
OneZeroFirst04ibmnairobi = 2196
OneOneFirst04ibmnairobi = 531
```



ZeroZeroFirst02ibmnairobi = 2225  
 ZeroOneFirst02ibmnairobi = 3824  
 OneZeroFirst02ibmnairobi = 1548  
 OneOneFirst02ibmnairobi = 595

ZeroZeroFirst00ibmnairobi = 2176  
 ZeroOneFirst00ibmnairobi = 4165  
 OneZeroFirst00ibmnairobi = 1188  
 OneOneFirst00ibmnairobi = 663

ZeroZeroSecond02ibmnairobi = 1961  
 ZeroOneSecond02ibmnairobi = 4037  
 OneZeroSecond02ibmnairobi = 1685  
 OneOneSecond02ibmnairobi = 509

ZeroZeroSecond04ibmnairobi = 2112  
 ZeroOneSecond04ibmnairobi = 3430  
 OneZeroSecond04ibmnairobi = 2264  
 OneOneSecond04ibmnairobi = 386

ZeroZeroSecond06ibmnairobi = 2341  
 ZeroOneSecond06ibmnairobi = 2352  
 OneZeroSecond06ibmnairobi = 3296  
 OneOneSecond06ibmnairobi = 203

ZeroZeroSecond08ibmnairobi = 2194  
 ZeroOneSecond08ibmnairobi = 2059  
 OneZeroSecond08ibmnairobi = 3827  
 OneOneSecond08ibmnairobi = 112

ZeroZeroSecond10ibmnairobi = 2330  
 ZeroOneSecond10ibmnairobi = 1962  
 OneZeroSecond10ibmnairobi = 3787  
 OneOneSecond10ibmnairobi = 113

CosSqibmnairobi =  $\{ \{-1 * \pi,$   
 $\text{ZeroZeroSecond10ibmnairobi} / (\text{OneZeroSecond10ibmnairobi} + \text{ZeroZeroSecond10ibmnairobi}) \},$   
 $\{-0.8 * \pi, \text{ZeroZeroSecond08ibmnairobi} /$   
 $(\text{OneZeroSecond08ibmnairobi} + \text{ZeroZeroSecond08ibmnairobi}) \}, \{-0.6 * \pi,$   
 $\text{ZeroZeroSecond06ibmnairobi} / (\text{OneZeroSecond06ibmnairobi} + \text{ZeroZeroSecond06ibmnairobi}) \},$   
 $\{-0.4 * \pi, \text{ZeroZeroSecond04ibmnairobi} /$   
 $(\text{OneZeroSecond04ibmnairobi} + \text{ZeroZeroSecond04ibmnairobi}) \}, \{-0.2 * \pi,$   
 $\text{ZeroZeroSecond02ibmnairobi} / (\text{OneZeroSecond02ibmnairobi} + \text{ZeroZeroSecond02ibmnairobi}) \},$   
 $\{0.0 * \pi, \text{ZeroZeroFirst00ibmnairobi} /$   
 $(\text{OneZeroFirst00ibmnairobi} + \text{ZeroZeroFirst00ibmnairobi}) \}, \{0.2 * \pi,$   
 $\text{ZeroZeroFirst02ibmnairobi} / (\text{OneZeroFirst02ibmnairobi} + \text{ZeroZeroFirst02ibmnairobi}) \},$   
 $\{0.4 * \pi, \text{ZeroZeroFirst04ibmnairobi} /$   
 $(\text{OneZeroFirst04ibmnairobi} + \text{ZeroZeroFirst04ibmnairobi}) \}, \{0.6 * \pi,$   
 $\text{ZeroZeroFirst06ibmnairobi} / (\text{OneZeroFirst06ibmnairobi} + \text{ZeroZeroFirst06ibmnairobi}) \},$   
 $\{0.8 * \pi, \text{ZeroZeroFirst08ibmnairobi} /$

```

      (OneZeroFirst08ibmnairobi + ZeroZeroFirst08ibmnairobi)}, {1 *  $\pi$ ,
      ZeroZeroFirst10ibmnairobi / (OneZeroFirst10ibmnairobi + ZeroZeroFirst10ibmnairobi)}}
Decisivenessibmnairobi = {{-1 *  $\pi$ , (OneZeroSecond10ibmnairobi + ZeroZeroSecond10ibmnairobi) /
      8192}, {-0.8 *  $\pi$ , (OneZeroSecond08ibmnairobi + ZeroZeroSecond08ibmnairobi) / 8192},
      {-0.6 *  $\pi$ , (OneZeroSecond06ibmnairobi + ZeroZeroSecond06ibmnairobi) / 8192},
      {-0.4 *  $\pi$ , (OneZeroSecond04ibmnairobi + ZeroZeroSecond04ibmnairobi) / 8192},
      {-0.2 *  $\pi$ , (OneZeroSecond02ibmnairobi + ZeroZeroSecond02ibmnairobi) / 8192},
      {-0.0 *  $\pi$ , (OneZeroFirst00ibmnairobi + ZeroZeroFirst00ibmnairobi) / 8192},
      {0.2 *  $\pi$ , (OneZeroFirst02ibmnairobi + ZeroZeroFirst02ibmnairobi) / 8192},
      {0.4 *  $\pi$ , (OneZeroFirst04ibmnairobi + ZeroZeroFirst04ibmnairobi) / 8192},
      {0.6 *  $\pi$ , (OneZeroFirst06ibmnairobi + ZeroZeroFirst06ibmnairobi) / 8192},
      {0.8 *  $\pi$ , (OneZeroFirst08ibmnairobi + ZeroZeroFirst08ibmnairobi) / 8192},
      {1.0 *  $\pi$ , (OneZeroFirst10ibmnairobi + ZeroZeroFirst10ibmnairobi) / 8192}}
ExpCosSqibmnairobi = ListPlot[CosSqibmnairobi]
ExpDecisivenessibmnairobi = ListPlot[Decisivenessibmnairobi]

```

Out[ ]= 2330

Out[ ]= 1962

Out[ ]= 3787

Out[ ]= 113

Out[ ]= 2281

Out[ ]= 2184

Out[ ]= 3569

Out[ ]= 158

Out[ ]= 2214

Out[ ]= 2705

Out[ ]= 2959

Out[ ]= 314

Out[ ]= 2174

Out[ ]= 3291

Out[ ]= 2196

Out[ ]= 531

Out[ ]= 2225

Out[ ]= 3824

Out[ ]= 1548

Out[ ]= 595

Out[ ]= 2176

$\text{Out}[*]= 4165$

$\text{Out}[*]= 1188$

$\text{Out}[*]= 663$

$\text{Out}[*]= 1961$

$\text{Out}[*]= 4037$

$\text{Out}[*]= 1685$

$\text{Out}[*]= 509$

$\text{Out}[*]= 2112$

$\text{Out}[*]= 3430$

$\text{Out}[*]= 2264$

$\text{Out}[*]= 386$

$\text{Out}[*]= 2341$

$\text{Out}[*]= 2352$

$\text{Out}[*]= 3296$

$\text{Out}[*]= 203$

$\text{Out}[*]= 2194$

$\text{Out}[*]= 2059$

$\text{Out}[*]= 3827$

$\text{Out}[*]= 112$

$\text{Out}[*]= 2330$

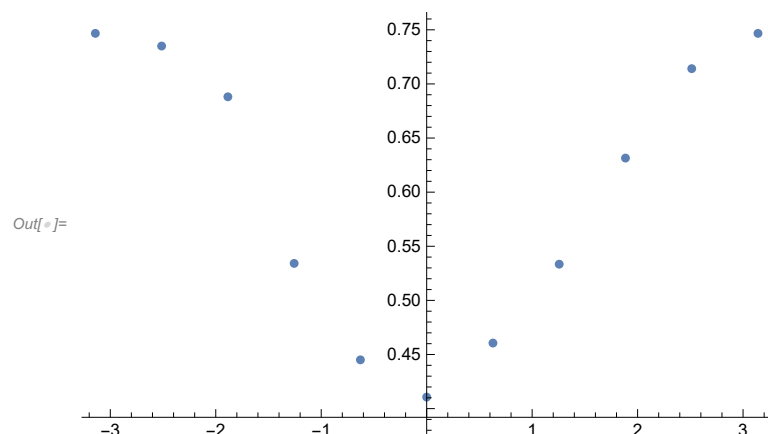
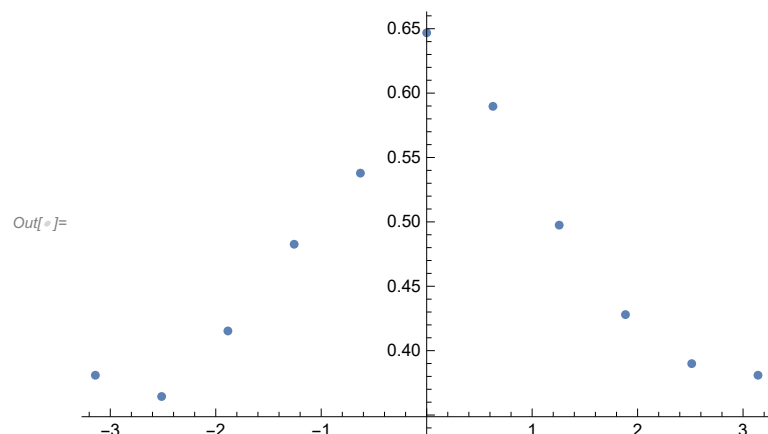
$\text{Out}[*]= 1962$

$\text{Out}[*]= 3787$

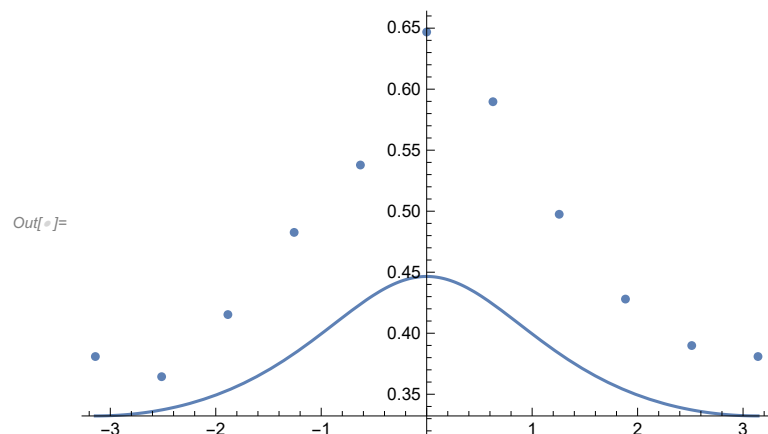
$\text{Out}[*]= 113$

$\text{Out}[*]= \left\{ \left\{ -\pi, \frac{2330}{6117} \right\}, \left\{ -2.51327, \frac{2194}{6021} \right\}, \left\{ -1.88496, \frac{2341}{5637} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{264}{547} \right\}, \left\{ -0.628319, \frac{1961}{3646} \right\}, \left\{ 0., \frac{544}{841} \right\}, \left\{ 0.628319, \frac{2225}{3773} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1087}{2185} \right\}, \left\{ 1.88496, \frac{2214}{5173} \right\}, \left\{ 2.51327, \frac{2281}{5850} \right\}, \left\{ \pi, \frac{2330}{6117} \right\} \right\}$

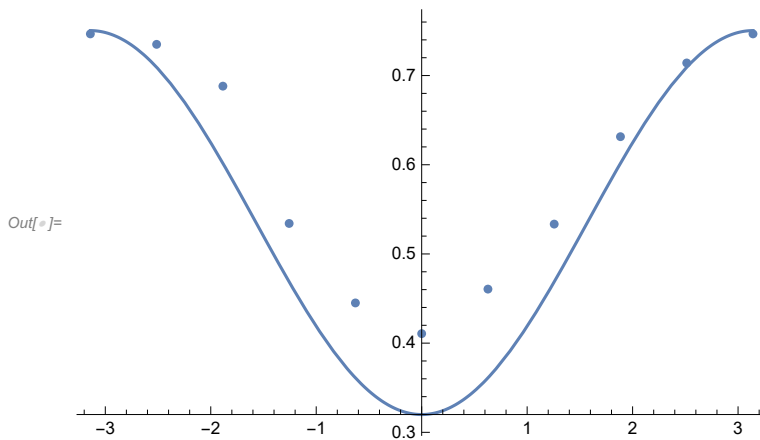
Out[ ]:=  $\left\{ \left\{ -\pi, \frac{6117}{8192} \right\}, \left\{ -2.51327, \frac{6021}{8192} \right\}, \left\{ -1.88496, \frac{5637}{8192} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{547}{1024} \right\}, \left\{ -0.628319, \frac{1823}{4096} \right\}, \left\{ 0., \frac{841}{2048} \right\}, \left\{ 0.628319, \frac{3773}{8192} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{2185}{4096} \right\}, \left\{ 1.88496, \frac{5173}{8192} \right\}, \left\{ 2.51327, \frac{2925}{4096} \right\}, \left\{ 3.14159, \frac{6117}{8192} \right\} \right\}$



In[ ]:= Show[cosTH, ExpCosSqibmnairobi, PlotRange → All]



In[ ]:= Show[decTH, ExpDecisivenessibmnairobi, PlotRange → All]



In[ ]:= (\*ibm\_oslo\*)

ZeroZeroFirst10ibmoslo = 2197

ZeroOneFirst10ibmoslo = 2020

OneZeroFirst10ibmoslo = 3750

OneOneFirst10ibmoslo = 225

ZeroZeroFirst08ibmoslo = 2194

ZeroOneFirst08ibmoslo = 2186

OneZeroFirst08ibmoslo = 3556

OneOneFirst08ibmoslo = 256

ZeroZeroFirst06ibmoslo = 1853

ZeroOneFirst06ibmoslo = 2823

OneZeroFirst06ibmoslo = 3144

OneOneFirst06ibmoslo = 372

ZeroZeroFirst04ibmoslo = 1490

ZeroOneFirst04ibmoslo = 3649

OneZeroFirst04ibmoslo = 2460

OneOneFirst04ibmoslo = 593

ZeroZeroFirst02ibmoslo = 1202

ZeroOneFirst02ibmoslo = 4307

OneZeroFirst02ibmoslo = 2001

OneOneFirst02ibmoslo = 682

ZeroZeroFirst00ibmoslo = 1116

ZeroOneFirst00ibmoslo = 4572

OneZeroFirst00ibmoslo = 1763

OneOneFirst00ibmoslo = 741

ZeroZeroSecond02ibmoslo = 1166

ZeroOneSecond02ibmoslo = 4429

OneZeroSecond02ibmoslo = 1918

OneOneSecond02ibmoslo = 679

```

ZeroZeroSecond04ibmoslo = 1428
ZeroOneSecond04ibmoslo = 3804
OneZeroSecond04ibmoslo = 2410
OneOneSecond04ibmoslo = 550

```

```

ZeroZeroSecond06ibmoslo = 1830
ZeroOneSecond06ibmoslo = 3038
OneZeroSecond06ibmoslo = 2953
OneOneSecond06ibmoslo = 371

```

```

ZeroZeroSecond08ibmoslo = 2037
ZeroOneSecond08ibmoslo = 2486
OneZeroSecond08ibmoslo = 3452
OneOneSecond08ibmoslo = 217

```

```

ZeroZeroSecond10ibmoslo = 2197
ZeroOneSecond10ibmoslo = 2020
OneZeroSecond10ibmoslo = 3750
OneOneSecond10ibmoslo = 225

```

```
CosSqibmoslo =
```

```

{ {-1 *  $\pi$ , ZeroZeroSecond10ibmoslo / (OneZeroSecond10ibmoslo + ZeroZeroSecond10ibmoslo)},
  {-0.8 *  $\pi$ , ZeroZeroSecond08ibmoslo / (OneZeroSecond08ibmoslo + ZeroZeroSecond08ibmoslo)},
  {-0.6 *  $\pi$ , ZeroZeroSecond06ibmoslo / (OneZeroSecond06ibmoslo + ZeroZeroSecond06ibmoslo)},
  {-0.4 *  $\pi$ , ZeroZeroSecond04ibmoslo / (OneZeroSecond04ibmoslo + ZeroZeroSecond04ibmoslo)},
  {-0.2 *  $\pi$ , ZeroZeroSecond02ibmoslo / (OneZeroSecond02ibmoslo + ZeroZeroSecond02ibmoslo)},
  {0.0 *  $\pi$ , ZeroZeroFirst00ibmoslo / (OneZeroFirst00ibmoslo + ZeroZeroFirst00ibmoslo)},
  {0.2 *  $\pi$ , ZeroZeroFirst02ibmoslo / (OneZeroFirst02ibmoslo + ZeroZeroFirst02ibmoslo)},
  {0.4 *  $\pi$ , ZeroZeroFirst04ibmoslo / (OneZeroFirst04ibmoslo + ZeroZeroFirst04ibmoslo)},
  {0.6 *  $\pi$ , ZeroZeroFirst06ibmoslo / (OneZeroFirst06ibmoslo + ZeroZeroFirst06ibmoslo)},
  {0.8 *  $\pi$ , ZeroZeroFirst08ibmoslo / (OneZeroFirst08ibmoslo + ZeroZeroFirst08ibmoslo)},
  {1 *  $\pi$ , ZeroZeroFirst10ibmoslo / (OneZeroFirst10ibmoslo + ZeroZeroFirst10ibmoslo)} }
Decisivenessibmoslo = { {-1 *  $\pi$ , (OneZeroSecond10ibmoslo + ZeroZeroSecond10ibmoslo) / 8192},
  {-0.8 *  $\pi$ , (OneZeroSecond08ibmoslo + ZeroZeroSecond08ibmoslo) / 8192},
  {-0.6 *  $\pi$ , (OneZeroSecond06ibmoslo + ZeroZeroSecond06ibmoslo) / 8192},
  {-0.4 *  $\pi$ , (OneZeroSecond04ibmoslo + ZeroZeroSecond04ibmoslo) / 8192},
  {-0.2 *  $\pi$ , (OneZeroSecond02ibmoslo + ZeroZeroSecond02ibmoslo) / 8192},
  {-0.0 *  $\pi$ , (OneZeroFirst00ibmoslo + ZeroZeroFirst00ibmoslo) / 8192},
  {0.2 *  $\pi$ , (OneZeroFirst02ibmoslo + ZeroZeroFirst02ibmoslo) / 8192},
  {0.4 *  $\pi$ , (OneZeroFirst04ibmoslo + ZeroZeroFirst04ibmoslo) / 8192},
  {0.6 *  $\pi$ , (OneZeroFirst06ibmoslo + ZeroZeroFirst06ibmoslo) / 8192},
  {0.8 *  $\pi$ , (OneZeroFirst08ibmoslo + ZeroZeroFirst08ibmoslo) / 8192},
  {1.0 *  $\pi$ , (OneZeroFirst10ibmoslo + ZeroZeroFirst10ibmoslo) / 8192} }

```

```
ExpCosSqibmoslo = ListPlot[CosSqibmoslo]
```

```
ExpDecisivenessibmoslo = ListPlot[Decisivenessibmoslo]
```

```
Out[ ]= 2197
```

```
Out[ ]= 2020
```

$Out[ \ast ] = 3750$

$Out[ \ast ] = 225$

$Out[ \ast ] = 2194$

$Out[ \ast ] = 2186$

$Out[ \ast ] = 3556$

$Out[ \ast ] = 256$

$Out[ \ast ] = 1853$

$Out[ \ast ] = 2823$

$Out[ \ast ] = 3144$

$Out[ \ast ] = 372$

$Out[ \ast ] = 1490$

$Out[ \ast ] = 3649$

$Out[ \ast ] = 2460$

$Out[ \ast ] = 593$

$Out[ \ast ] = 1202$

$Out[ \ast ] = 4307$

$Out[ \ast ] = 2001$

$Out[ \ast ] = 682$

$Out[ \ast ] = 1116$

$Out[ \ast ] = 4572$

$Out[ \ast ] = 1763$

$Out[ \ast ] = 741$

$Out[ \ast ] = 1166$

$Out[ \ast ] = 4429$

$Out[ \ast ] = 1918$

$Out[ \ast ] = 679$

$Out[ \ast ] = 1428$

$Out[ \ast ] = 3804$

$Out[ \ast ] = 2410$

$Out[ \ast ] = 550$

$Out[ \ast ] = 1830$

Out[ ]= 3038

Out[ ]= 2953

Out[ ]= 371

Out[ ]= 2037

Out[ ]= 2486

Out[ ]= 3452

Out[ ]= 217

Out[ ]= 2197

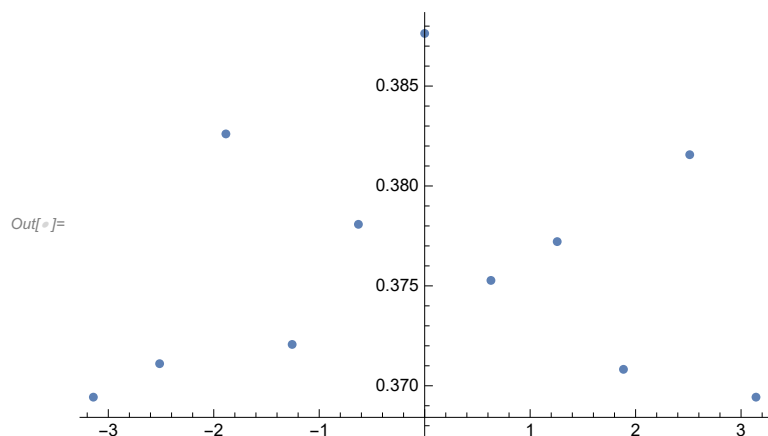
Out[ ]= 2020

Out[ ]= 3750

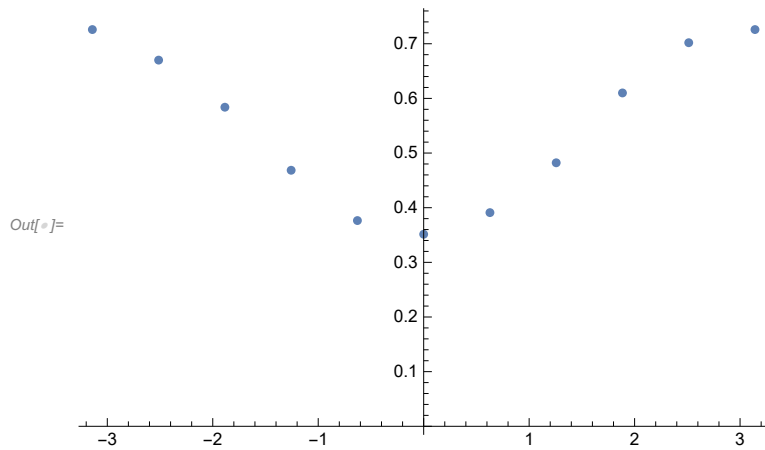
Out[ ]= 225

Out[ ]=  $\left\{ \left\{ -\pi, \frac{2197}{5947} \right\}, \left\{ -2.51327, \frac{2037}{5489} \right\}, \left\{ -1.88496, \frac{1830}{4783} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{714}{1919} \right\}, \left\{ -0.628319, \frac{583}{1542} \right\}, \left\{ 0., \frac{1116}{2879} \right\}, \left\{ 0.628319, \frac{1202}{3203} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{149}{395} \right\}, \left\{ 1.88496, \frac{1853}{4997} \right\}, \left\{ 2.51327, \frac{1097}{2875} \right\}, \left\{ \pi, \frac{2197}{5947} \right\} \right\}$

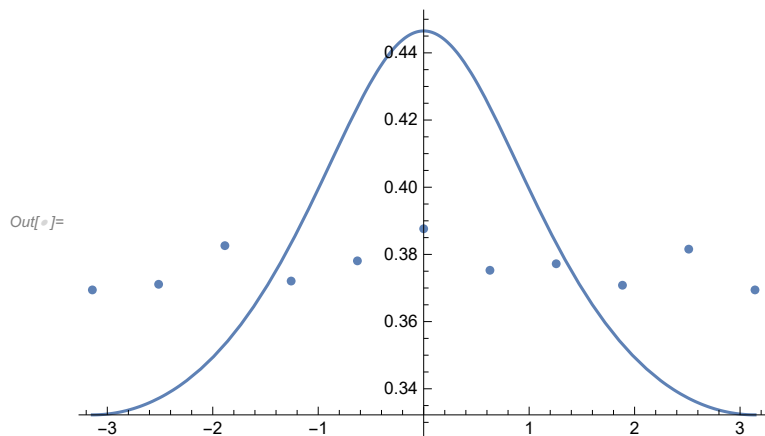
Out[ ]=  $\left\{ \left\{ -\pi, \frac{5947}{8192} \right\}, \left\{ -2.51327, \frac{5489}{8192} \right\}, \left\{ -1.88496, \frac{4783}{8192} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{1919}{4096} \right\}, \left\{ -0.628319, \frac{771}{2048} \right\}, \left\{ 0., \frac{2879}{8192} \right\}, \left\{ 0.628319, \frac{3203}{8192} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1975}{4096} \right\}, \left\{ 1.88496, \frac{4997}{8192} \right\}, \left\{ 2.51327, \frac{2875}{4096} \right\}, \left\{ 3.14159, \frac{5947}{8192} \right\} \right\}$



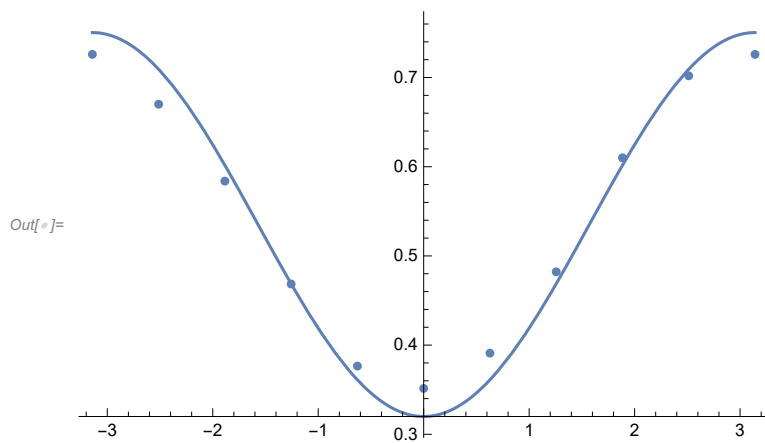




In[ ]:= **Show[cosh, ExpCosSqibmoslo, PlotRange → All]**



In[ ]:= **Show[decTH, ExpDecisivenessibmoslo]**



In[ ]:= **(\*ibmq\_manila\*)**

**ZeroZeroFirst10ibmqmanila = 2199**

**ZeroOneFirst10ibmqmanila = 1996**

**OneZeroFirst10ibmqmanila = 3826**

**OneOneFirst10ibmqmanila = 171**

**ZeroZeroFirst08ibmqmanila = 2310**

ZeroOneFirst08ibmqmanila = 2174  
 OneZeroFirst08ibmqmanila = 3465  
 OneOneFirst08ibmqmanila = 243

ZeroZeroFirst06ibmqmanila = 2073  
 ZeroOneFirst06ibmqmanila = 2884  
 OneZeroFirst06ibmqmanila = 2927  
 OneOneFirst06ibmqmanila = 308

ZeroZeroFirst04ibmqmanila = 1756  
 ZeroOneFirst04ibmqmanila = 3825  
 OneZeroFirst04ibmqmanila = 2152  
 OneOneFirst04ibmqmanila = 459

ZeroZeroFirst02ibmqmanila = 1603  
 ZeroOneFirst02ibmqmanila = 4337  
 OneZeroFirst02ibmqmanila = 1648  
 OneOneFirst02ibmqmanila = 604

ZeroZeroFirst00ibmqmanila = 1609  
 ZeroOneFirst00ibmqmanila = 4055  
 OneZeroFirst00ibmqmanila = 1597  
 OneOneFirst00ibmqmanila = 931

ZeroZeroSecond02ibmqmanila = 1554  
 ZeroOneSecond02ibmqmanila = 3952  
 OneZeroSecond02ibmqmanila = 1854  
 OneOneSecond02ibmqmanila = 832

ZeroZeroSecond04ibmqmanila = 1632  
 ZeroOneSecond04ibmqmanila = 3326  
 OneZeroSecond04ibmqmanila = 2379  
 OneOneSecond04ibmqmanila = 855

ZeroZeroSecond06ibmqmanila = 2007  
 ZeroOneSecond06ibmqmanila = 2642  
 OneZeroSecond06ibmqmanila = 3128  
 OneOneSecond06ibmqmanila = 415

ZeroZeroSecond08ibmqmanila = 2024  
 ZeroOneSecond08ibmqmanila = 2226  
 OneZeroSecond08ibmqmanila = 3523  
 OneOneSecond08ibmqmanila = 419

ZeroZeroSecond10ibmqmanila = 2199  
 ZeroOneSecond10ibmqmanila = 1996  
 OneZeroSecond10ibmqmanila = 3826  
 OneOneSecond10ibmqmanila = 171

$\text{CosSqibmqmanila} = \{ \{-1 * \pi,$   
 $\text{ZeroZeroSecond10ibmqmanila} / (\text{OneZeroSecond10ibmqmanila} + \text{ZeroZeroSecond10ibmqmanila}) \},$

```

{-0.8 *  $\pi$ , ZeroZeroSecond08ibmqmanila /
  (OneZeroSecond08ibmqmanila + ZeroZeroSecond08ibmqmanila)}, {-0.6 *  $\pi$ ,
  ZeroZeroSecond06ibmqmanila / (OneZeroSecond06ibmqmanila + ZeroZeroSecond06ibmqmanila)},
{-0.4 *  $\pi$ , ZeroZeroSecond04ibmqmanila /
  (OneZeroSecond04ibmqmanila + ZeroZeroSecond04ibmqmanila)}, {-0.2 *  $\pi$ ,
  ZeroZeroSecond02ibmqmanila / (OneZeroSecond02ibmqmanila + ZeroZeroSecond02ibmqmanila)},
{0.0 *  $\pi$ , ZeroZeroFirst00ibmqmanila /
  (OneZeroFirst00ibmqmanila + ZeroZeroFirst00ibmqmanila)}, {0.2 *  $\pi$ ,
  ZeroZeroFirst02ibmqmanila / (OneZeroFirst02ibmqmanila + ZeroZeroFirst02ibmqmanila)},
{0.4 *  $\pi$ , ZeroZeroFirst04ibmqmanila /
  (OneZeroFirst04ibmqmanila + ZeroZeroFirst04ibmqmanila)}, {0.6 *  $\pi$ ,
  ZeroZeroFirst06ibmqmanila / (OneZeroFirst06ibmqmanila + ZeroZeroFirst06ibmqmanila)},
{0.8 *  $\pi$ , ZeroZeroFirst08ibmqmanila /
  (OneZeroFirst08ibmqmanila + ZeroZeroFirst08ibmqmanila)}, {1 *  $\pi$ ,
  ZeroZeroFirst10ibmqmanila / (OneZeroFirst10ibmqmanila + ZeroZeroFirst10ibmqmanila)}}
Decisivenessibmqmanila = {{-1 *  $\pi$ , (OneZeroSecond10ibmqmanila + ZeroZeroSecond10ibmqmanila) /
  8192}, {-0.8 *  $\pi$ , (OneZeroSecond08ibmqmanila + ZeroZeroSecond08ibmqmanila) / 8192},
{-0.6 *  $\pi$ , (OneZeroSecond06ibmqmanila + ZeroZeroSecond06ibmqmanila) / 8192},
{-0.4 *  $\pi$ , (OneZeroSecond04ibmqmanila + ZeroZeroSecond04ibmqmanila) / 8192},
{-0.2 *  $\pi$ , (OneZeroSecond02ibmqmanila + ZeroZeroSecond02ibmqmanila) / 8192},
{-0.0 *  $\pi$ , (OneZeroFirst00ibmqmanila + ZeroZeroFirst00ibmqmanila) / 8192},
{0.2 *  $\pi$ , (OneZeroFirst02ibmqmanila + ZeroZeroFirst02ibmqmanila) / 8192},
{0.4 *  $\pi$ , (OneZeroFirst04ibmqmanila + ZeroZeroFirst04ibmqmanila) / 8192},
{0.6 *  $\pi$ , (OneZeroFirst06ibmqmanila + ZeroZeroFirst06ibmqmanila) / 8192},
{0.8 *  $\pi$ , (OneZeroFirst08ibmqmanila + ZeroZeroFirst08ibmqmanila) / 8192},
{1.0 *  $\pi$ , (OneZeroFirst10ibmqmanila + ZeroZeroFirst10ibmqmanila) / 8192}}
ExpCosSqibmqmanila = ListPlot[CosSqibmqmanila]
ExpDecisivenessibmqmanila = ListPlot[Decisivenessibmqmanila]

```

Out[ ]= 2199

Out[ ]= 1996

Out[ ]= 3826

Out[ ]= 171

Out[ ]= 2310

Out[ ]= 2174

Out[ ]= 3465

Out[ ]= 243

Out[ ]= 2073

Out[ ]= 2884

Out[ ]= 2927

Out[ ]= 308

Out[ ]= 1756

Out[ ]= 3825

Out[ ]= 2152

Out[ ]= 459

Out[ ]= 1603

Out[ ]= 4337

Out[ ]= 1648

Out[ ]= 604

Out[ ]= 1609

Out[ ]= 4055

Out[ ]= 1597

Out[ ]= 931

Out[ ]= 1554

Out[ ]= 3952

Out[ ]= 1854

Out[ ]= 832

Out[ ]= 1632

Out[ ]= 3326

Out[ ]= 2379

Out[ ]= 855

Out[ ]= 2007

Out[ ]= 2642

Out[ ]= 3128

Out[ ]= 415

Out[ ]= 2024

Out[ ]= 2226

Out[ ]= 3523

Out[ ]= 419

Out[ ]= 2199

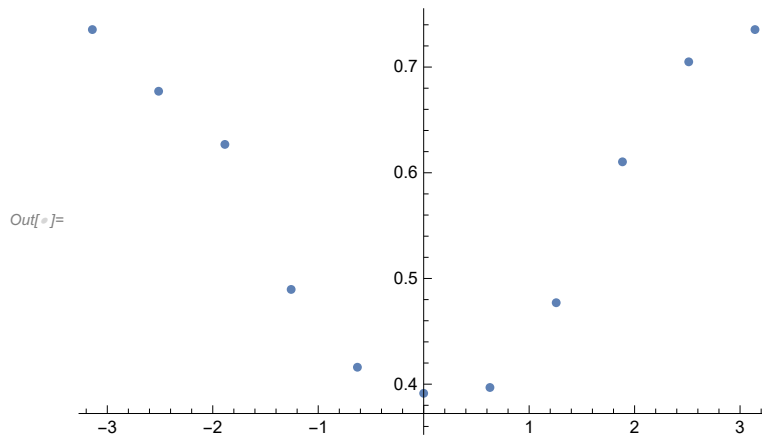
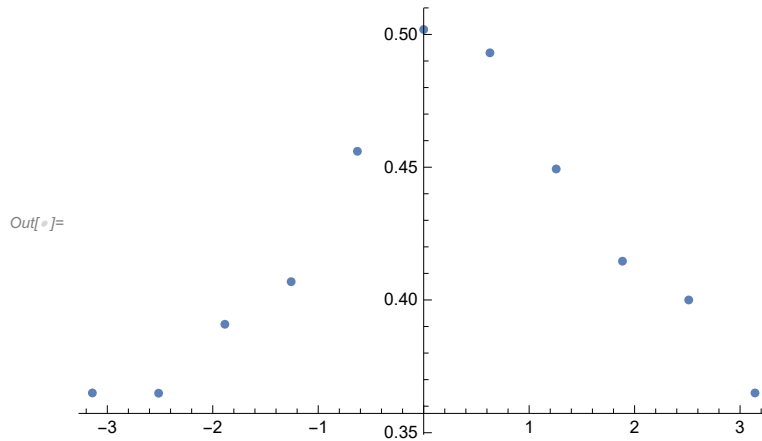
Out[ ]= 1996

Out[ ]= 3826

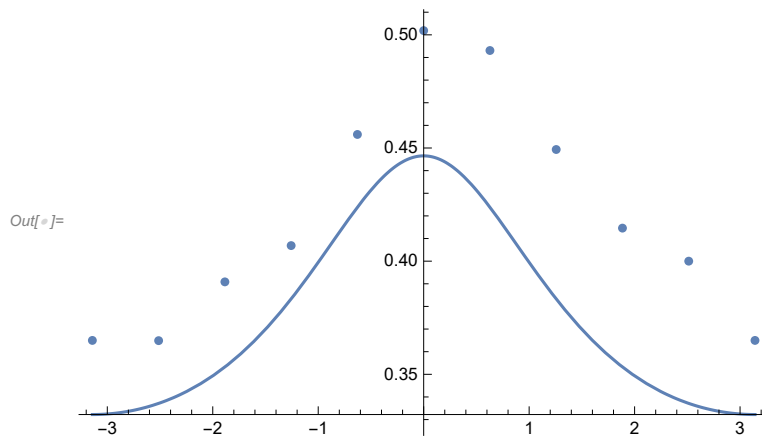
Out[ ]= 171

$$\text{Out[ ]} = \left\{ \left\{ -\pi, \frac{2199}{6025} \right\}, \left\{ -2.51327, \frac{2024}{5547} \right\}, \left\{ -1.88496, \frac{2007}{5135} \right\}, \left\{ -1.25664, \frac{544}{1337} \right\}, \left\{ -0.628319, \frac{259}{568} \right\}, \right. \\ \left. \left\{ 0., \frac{1609}{3206} \right\}, \left\{ 0.628319, \frac{1603}{3251} \right\}, \left\{ 1.25664, \frac{439}{977} \right\}, \left\{ 1.88496, \frac{2073}{5000} \right\}, \left\{ 2.51327, \frac{2}{5} \right\}, \left\{ \pi, \frac{2199}{6025} \right\} \right\}$$

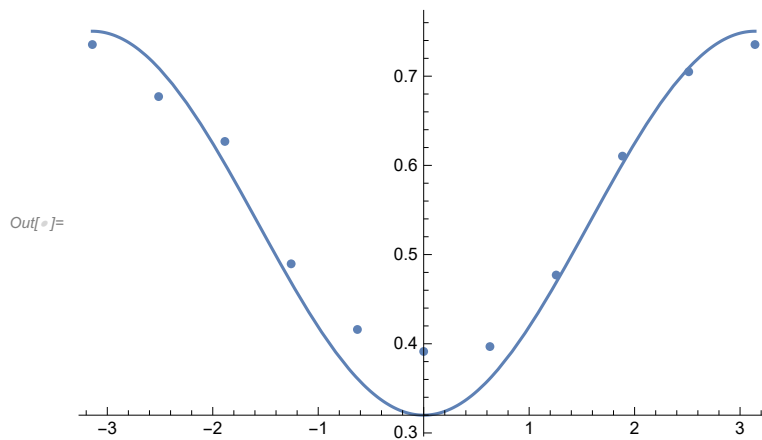
$$\text{Out[ ]} = \left\{ \left\{ -\pi, \frac{6025}{8192} \right\}, \left\{ -2.51327, \frac{5547}{8192} \right\}, \left\{ -1.88496, \frac{5135}{8192} \right\}, \right. \\ \left\{ -1.25664, \frac{4011}{8192} \right\}, \left\{ -0.628319, \frac{213}{512} \right\}, \left\{ 0., \frac{1603}{4096} \right\}, \left\{ 0.628319, \frac{3251}{8192} \right\}, \\ \left\{ 1.25664, \frac{977}{2048} \right\}, \left\{ 1.88496, \frac{625}{1024} \right\}, \left\{ 2.51327, \frac{5775}{8192} \right\}, \left\{ 3.14159, \frac{6025}{8192} \right\} \right\}$$



```
In[ ]:= Show[cosTH, ExpCosSqibmqmanila, PlotRange -> All]
```



```
In[ ]:= Show[decTH, ExpDecisivenessibmqmanila, PlotRange -> All]
```



```
In[ ]:= (*ibmq_quito*)
```

```
ZeroZeroFirst10ibmqquito = 2109
```

```
ZeroOneFirst10ibmqquito = 2013
```

```
OneZeroFirst10ibmqquito = 4044
```

```
OneOneFirst10ibmqquito = 26
```

```
ZeroZeroFirst08ibmqquito = 1994
```

```
ZeroOneFirst08ibmqquito = 2246
```

```
OneZeroFirst08ibmqquito = 3877
```

```
OneOneFirst08ibmqquito = 75
```

```
ZeroZeroFirst06ibmqquito = 1782
```

```
ZeroOneFirst06ibmqquito = 3093
```

```
OneZeroFirst06ibmqquito = 3128
```

```
OneOneFirst06ibmqquito = 189
```

```
ZeroZeroFirst04ibmqquito = 1469
```

```
ZeroOneFirst04ibmqquito = 4045
```

```
OneZeroFirst04ibmqquito = 2329
```

```
OneOneFirst04ibmqquito = 349
```

ZeroZeroFirst02ibmqquito = 1270  
 ZeroOneFirst02ibmqquito = 4794  
 OneZeroFirst02ibmqquito = 1679  
 OneOneFirst02ibmqquito = 449

ZeroZeroFirst00ibmqquito = 1181  
 ZeroOneFirst00ibmqquito = 5038  
 OneZeroFirst00ibmqquito = 1454  
 OneOneFirst00ibmqquito = 519

ZeroZeroSecond02ibmqquito = 1241  
 ZeroOneSecond02ibmqquito = 4841  
 OneZeroSecond02ibmqquito = 1654  
 OneOneSecond02ibmqquito = 456

ZeroZeroSecond04ibmqquito = 1485  
 ZeroOneSecond04ibmqquito = 3933  
 OneZeroSecond04ibmqquito = 2402  
 OneOneSecond04ibmqquito = 372

ZeroZeroSecond06ibmqquito = 1753  
 ZeroOneSecond06ibmqquito = 3054  
 OneZeroSecond06ibmqquito = 3186  
 OneOneSecond06ibmqquito = 199

ZeroZeroSecond08ibmqquito = 1903  
 ZeroOneSecond08ibmqquito = 2274  
 OneZeroSecond08ibmqquito = 3922  
 OneOneSecond08ibmqquito = 93

ZeroZeroSecond10ibmqquito = 2109  
 ZeroOneSecond10ibmqquito = 2013  
 OneZeroSecond10ibmqquito = 4044  
 OneOneSecond10ibmqquito = 26

CosSqibmqquito =  $\{ \{-1 * \pi,$   
 $\text{ZeroZeroSecond10ibmqquito} / (\text{OneZeroSecond10ibmqquito} + \text{ZeroZeroSecond10ibmqquito}) \},$   
 $\{-0.8 * \pi, \text{ZeroZeroSecond08ibmqquito} /$   
 $(\text{OneZeroSecond08ibmqquito} + \text{ZeroZeroSecond08ibmqquito}) \}, \{-0.6 * \pi,$   
 $\text{ZeroZeroSecond06ibmqquito} / (\text{OneZeroSecond06ibmqquito} + \text{ZeroZeroSecond06ibmqquito}) \},$   
 $\{-0.4 * \pi, \text{ZeroZeroSecond04ibmqquito} /$   
 $(\text{OneZeroSecond04ibmqquito} + \text{ZeroZeroSecond04ibmqquito}) \}, \{-0.2 * \pi,$   
 $\text{ZeroZeroSecond02ibmqquito} / (\text{OneZeroSecond02ibmqquito} + \text{ZeroZeroSecond02ibmqquito}) \},$   
 $\{0.0 * \pi, \text{ZeroZeroFirst00ibmqquito} / (\text{OneZeroFirst00ibmqquito} + \text{ZeroZeroFirst00ibmqquito}) \},$   
 $\{0.2 * \pi, \text{ZeroZeroFirst02ibmqquito} / (\text{OneZeroFirst02ibmqquito} + \text{ZeroZeroFirst02ibmqquito}) \},$   
 $\{0.4 * \pi, \text{ZeroZeroFirst04ibmqquito} / (\text{OneZeroFirst04ibmqquito} + \text{ZeroZeroFirst04ibmqquito}) \},$   
 $\{0.6 * \pi, \text{ZeroZeroFirst06ibmqquito} / (\text{OneZeroFirst06ibmqquito} + \text{ZeroZeroFirst06ibmqquito}) \},$   
 $\{0.8 * \pi, \text{ZeroZeroFirst08ibmqquito} / (\text{OneZeroFirst08ibmqquito} + \text{ZeroZeroFirst08ibmqquito}) \},$   
 $\{1 * \pi, \text{ZeroZeroFirst10ibmqquito} / (\text{OneZeroFirst10ibmqquito} + \text{ZeroZeroFirst10ibmqquito}) \} \}$   
 Decisivenessibmqquito =

```
{ {-1 *  $\pi$ , (OneZeroSecond10ibmqquito + ZeroZeroSecond10ibmqquito) / 8192},
  {-0.8 *  $\pi$ , (OneZeroSecond08ibmqquito + ZeroZeroSecond08ibmqquito) / 8192},
  {-0.6 *  $\pi$ , (OneZeroSecond06ibmqquito + ZeroZeroSecond06ibmqquito) / 8192},
  {-0.4 *  $\pi$ , (OneZeroSecond04ibmqquito + ZeroZeroSecond04ibmqquito) / 8192},
  {-0.2 *  $\pi$ , (OneZeroSecond02ibmqquito + ZeroZeroSecond02ibmqquito) / 8192},
  {-0.0 *  $\pi$ , (OneZeroFirst00ibmqquito + ZeroZeroFirst00ibmqquito) / 8192},
  {0.2 *  $\pi$ , (OneZeroFirst02ibmqquito + ZeroZeroFirst02ibmqquito) / 8192},
  {0.4 *  $\pi$ , (OneZeroFirst04ibmqquito + ZeroZeroFirst04ibmqquito) / 8192},
  {0.6 *  $\pi$ , (OneZeroFirst06ibmqquito + ZeroZeroFirst06ibmqquito) / 8192},
  {0.8 *  $\pi$ , (OneZeroFirst08ibmqquito + ZeroZeroFirst08ibmqquito) / 8192},
  {1.0 *  $\pi$ , (OneZeroFirst10ibmqquito + ZeroZeroFirst10ibmqquito) / 8192}}
```

```
ExpCosSqibmqquito = ListPlot[CosSqibmqquito]
```

```
ExpDecisivenessibmqquito = ListPlot[Decisivenessibmqquito]
```

```
Out[ ]= 2109
```

```
Out[ ]= 2013
```

```
Out[ ]= 4044
```

```
Out[ ]= 26
```

```
Out[ ]= 1994
```

```
Out[ ]= 2246
```

```
Out[ ]= 3877
```

```
Out[ ]= 75
```

```
Out[ ]= 1782
```

```
Out[ ]= 3093
```

```
Out[ ]= 3128
```

```
Out[ ]= 189
```

```
Out[ ]= 1469
```

```
Out[ ]= 4045
```

```
Out[ ]= 2329
```

```
Out[ ]= 349
```

```
Out[ ]= 1270
```

```
Out[ ]= 4794
```

```
Out[ ]= 1679
```

```
Out[ ]= 449
```

```
Out[ ]= 1181
```

```
Out[ ]= 5038
```



$\text{Out}[*]= 1454$

$\text{Out}[*]= 519$

$\text{Out}[*]= 1241$

$\text{Out}[*]= 4841$

$\text{Out}[*]= 1654$

$\text{Out}[*]= 456$

$\text{Out}[*]= 1485$

$\text{Out}[*]= 3933$

$\text{Out}[*]= 2402$

$\text{Out}[*]= 372$

$\text{Out}[*]= 1753$

$\text{Out}[*]= 3054$

$\text{Out}[*]= 3186$

$\text{Out}[*]= 199$

$\text{Out}[*]= 1903$

$\text{Out}[*]= 2274$

$\text{Out}[*]= 3922$

$\text{Out}[*]= 93$

$\text{Out}[*]= 2109$

$\text{Out}[*]= 2013$

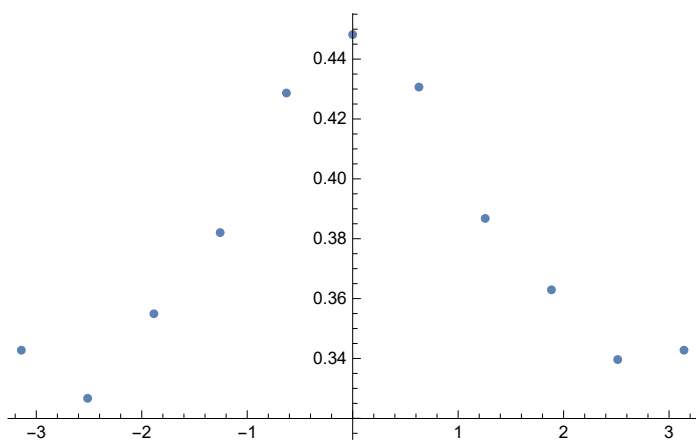
$\text{Out}[*]= 4044$

$\text{Out}[*]= 26$

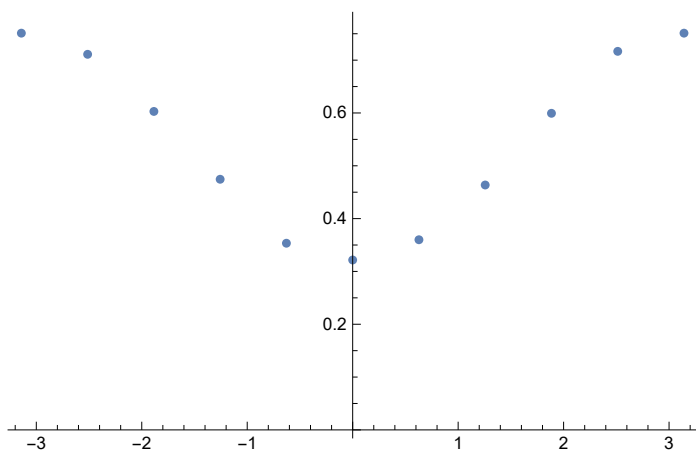
$\text{Out}[*]= \left\{ \left\{ -\pi, \frac{703}{2051} \right\}, \left\{ -2.51327, \frac{1903}{5825} \right\}, \left\{ -1.88496, \frac{1753}{4939} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{1485}{3887} \right\}, \left\{ -0.628319, \frac{1241}{2895} \right\}, \left\{ 0., \frac{1181}{2635} \right\}, \left\{ 0.628319, \frac{1270}{2949} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1469}{3798} \right\}, \left\{ 1.88496, \frac{891}{2455} \right\}, \left\{ 2.51327, \frac{1994}{5871} \right\}, \left\{ \pi, \frac{703}{2051} \right\} \right\}$

$\text{Out}[*]= \left\{ \left\{ -\pi, \frac{6153}{8192} \right\}, \left\{ -2.51327, \frac{5825}{8192} \right\}, \left\{ -1.88496, \frac{4939}{8192} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{3887}{8192} \right\}, \left\{ -0.628319, \frac{2895}{8192} \right\}, \left\{ 0., \frac{2635}{8192} \right\}, \left\{ 0.628319, \frac{2949}{8192} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1899}{4096} \right\}, \left\{ 1.88496, \frac{2455}{4096} \right\}, \left\{ 2.51327, \frac{5871}{8192} \right\}, \left\{ 3.14159, \frac{6153}{8192} \right\} \right\}$

Out[ ]=

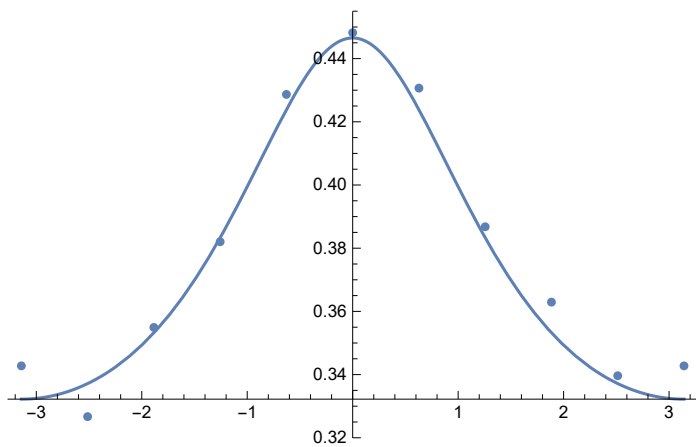


Out[ ]=

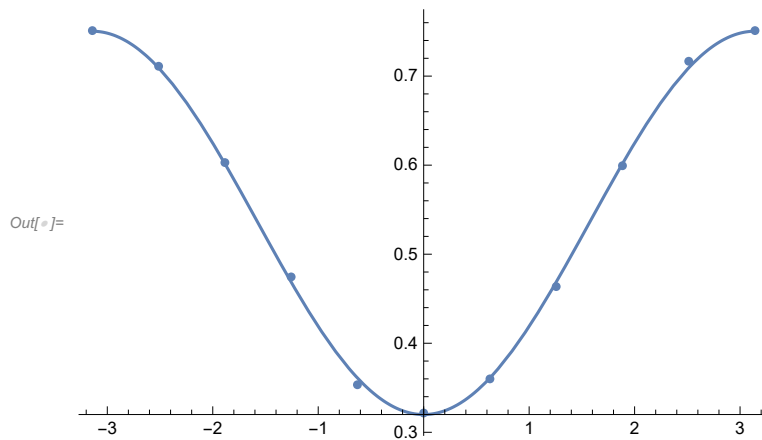


In[ ]:= Show[cosTH, ExpCosSqibmqquito, PlotRange → All]

Out[ ]=



In[ ]:= Show[decTH, ExpDecisivenessibmqquito, PlotRange → All]



In[ ]:= (\*ibmq\_lima\*)

ZeroZeroFirst10ibmqlima = 2240

ZeroOneFirst10ibmqlima = 1929

OneZeroFirst10ibmqlima = 3914

OneOneFirst10ibmqlima = 109

ZeroZeroFirst08ibmqlima = 2140

ZeroOneFirst08ibmqlima = 2090

OneZeroFirst08ibmqlima = 3733

OneOneFirst08ibmqlima = 229

ZeroZeroFirst06ibmqlima = 1871

ZeroOneFirst06ibmqlima = 2913

OneZeroFirst06ibmqlima = 2924

OneOneFirst06ibmqlima = 484

ZeroZeroFirst04ibmqlima = 1707

ZeroOneFirst04ibmqlima = 3768

OneZeroFirst04ibmqlima = 2117

OneOneFirst04ibmqlima = 600

ZeroZeroFirst02ibmqlima = 1507

ZeroOneFirst02ibmqlima = 4666

OneZeroFirst02ibmqlima = 1512

OneOneFirst02ibmqlima = 507

ZeroZeroFirst00ibmqlima = 1386

ZeroOneFirst00ibmqlima = 4761

OneZeroFirst00ibmqlima = 1384

OneOneFirst00ibmqlima = 661

ZeroZeroSecond02ibmqlima = 1504

ZeroOneSecond02ibmqlima = 4449

OneZeroSecond02ibmqlima = 1549

OneOneSecond02ibmqlima = 690

```

ZeroZeroSecond04ibmqlima = 1853
ZeroOneSecond04ibmqlima = 3750
OneZeroSecond04ibmqlima = 2194
OneOneSecond04ibmqlima = 395

```

```

ZeroZeroSecond06ibmqlima = 1920
ZeroOneSecond06ibmqlima = 3050
OneZeroSecond06ibmqlima = 2942
OneOneSecond06ibmqlima = 280

```

```

ZeroZeroSecond08ibmqlima = 2157
ZeroOneSecond08ibmqlima = 2328
OneZeroSecond08ibmqlima = 3514
OneOneSecond08ibmqlima = 193

```

```

ZeroZeroSecond10ibmqlima = 2240
ZeroOneSecond10ibmqlima = 1929
OneZeroSecond10ibmqlima = 3914
OneOneSecond10ibmqlima = 109

```

```
CosSqibmqlima =
```

```

{{-1 *  $\pi$ , ZeroZeroSecond10ibmqlima / (OneZeroSecond10ibmqlima + ZeroZeroSecond10ibmqlima)},
{-0.8 *  $\pi$ , ZeroZeroSecond08ibmqlima /
  (OneZeroSecond08ibmqlima + ZeroZeroSecond08ibmqlima)}, {-0.6 *  $\pi$ ,
ZeroZeroSecond06ibmqlima / (OneZeroSecond06ibmqlima + ZeroZeroSecond06ibmqlima)},
{-0.4 *  $\pi$ , ZeroZeroSecond04ibmqlima /
  (OneZeroSecond04ibmqlima + ZeroZeroSecond04ibmqlima)}, {-0.2 *  $\pi$ ,
ZeroZeroSecond02ibmqlima / (OneZeroSecond02ibmqlima + ZeroZeroSecond02ibmqlima)},
{0.0 *  $\pi$ , ZeroZeroFirst00ibmqlima / (OneZeroFirst00ibmqlima + ZeroZeroFirst00ibmqlima)},
{0.2 *  $\pi$ , ZeroZeroFirst02ibmqlima / (OneZeroFirst02ibmqlima + ZeroZeroFirst02ibmqlima)},
{0.4 *  $\pi$ , ZeroZeroFirst04ibmqlima / (OneZeroFirst04ibmqlima + ZeroZeroFirst04ibmqlima)},
{0.6 *  $\pi$ , ZeroZeroFirst06ibmqlima / (OneZeroFirst06ibmqlima + ZeroZeroFirst06ibmqlima)},
{0.8 *  $\pi$ , ZeroZeroFirst08ibmqlima / (OneZeroFirst08ibmqlima + ZeroZeroFirst08ibmqlima)},
{1 *  $\pi$ , ZeroZeroFirst10ibmqlima / (OneZeroFirst10ibmqlima + ZeroZeroFirst10ibmqlima)}}

```

```
Decisivenessibmqlima =
```

```

{{-1 *  $\pi$ , (OneZeroSecond10ibmqlima + ZeroZeroSecond10ibmqlima) / 8192},
{-0.8 *  $\pi$ , (OneZeroSecond08ibmqlima + ZeroZeroSecond08ibmqlima) / 8192},
{-0.6 *  $\pi$ , (OneZeroSecond06ibmqlima + ZeroZeroSecond06ibmqlima) / 8192},
{-0.4 *  $\pi$ , (OneZeroSecond04ibmqlima + ZeroZeroSecond04ibmqlima) / 8192},
{-0.2 *  $\pi$ , (OneZeroSecond02ibmqlima + ZeroZeroSecond02ibmqlima) / 8192},
{-0.0 *  $\pi$ , (OneZeroFirst00ibmqlima + ZeroZeroFirst00ibmqlima) / 8192},
{0.2 *  $\pi$ , (OneZeroFirst02ibmqlima + ZeroZeroFirst02ibmqlima) / 8192},
{0.4 *  $\pi$ , (OneZeroFirst04ibmqlima + ZeroZeroFirst04ibmqlima) / 8192},
{0.6 *  $\pi$ , (OneZeroFirst06ibmqlima + ZeroZeroFirst06ibmqlima) / 8192},
{0.8 *  $\pi$ , (OneZeroFirst08ibmqlima + ZeroZeroFirst08ibmqlima) / 8192},
{1.0 *  $\pi$ , (OneZeroFirst10ibmqlima + ZeroZeroFirst10ibmqlima) / 8192}}

```

```
ExpCosSqibmqlima = ListPlot[CosSqibmqlima]
```

```
ExpDecisivenessibmqlima = ListPlot[Decisivenessibmqlima]
```

$Out[ \ast ] = 2240$

$Out[ \ast ] = 1929$

$Out[ \ast ] = 3914$

$Out[ \ast ] = 109$

$Out[ \ast ] = 2140$

$Out[ \ast ] = 2090$

$Out[ \ast ] = 3733$

$Out[ \ast ] = 229$

$Out[ \ast ] = 1871$

$Out[ \ast ] = 2913$

$Out[ \ast ] = 2924$

$Out[ \ast ] = 484$

$Out[ \ast ] = 1707$

$Out[ \ast ] = 3768$

$Out[ \ast ] = 2117$

$Out[ \ast ] = 600$

$Out[ \ast ] = 1507$

$Out[ \ast ] = 4666$

$Out[ \ast ] = 1512$

$Out[ \ast ] = 507$

$Out[ \ast ] = 1386$

$Out[ \ast ] = 4761$

$Out[ \ast ] = 1384$

$Out[ \ast ] = 661$

$Out[ \ast ] = 1504$

$Out[ \ast ] = 4449$

$Out[ \ast ] = 1549$

$Out[ \ast ] = 690$

$Out[ \ast ] = 1853$

$Out[ \ast ] = 3750$

$Out[ \ast ] = 2194$

Out[ ]= 395

Out[ ]= 1920

Out[ ]= 3050

Out[ ]= 2942

Out[ ]= 280

Out[ ]= 2157

Out[ ]= 2328

Out[ ]= 3514

Out[ ]= 193

Out[ ]= 2240

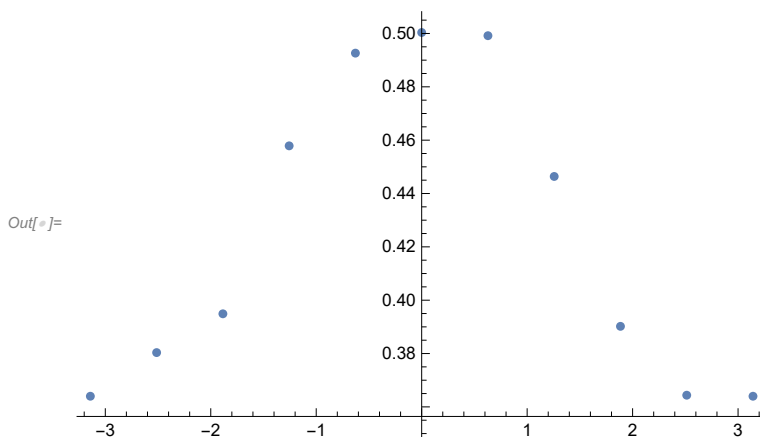
Out[ ]= 1929

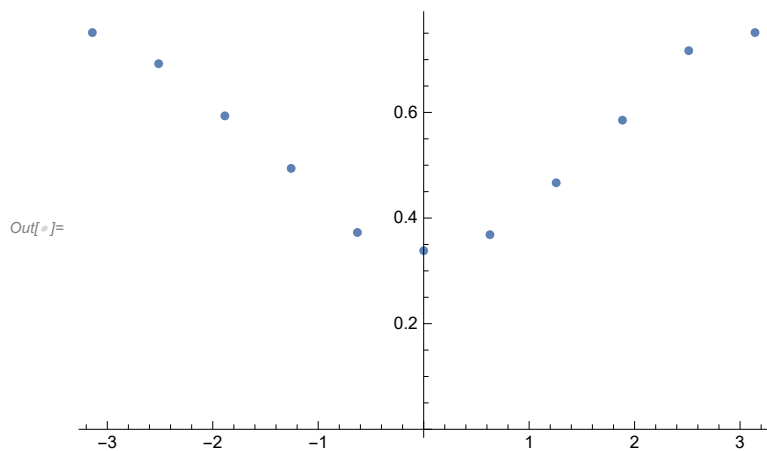
Out[ ]= 3914

Out[ ]= 109

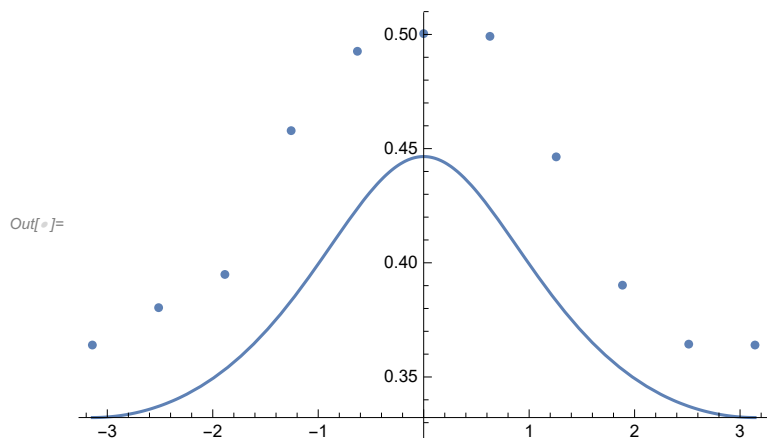
Out[ ]=  $\left\{ \left\{ -\pi, \frac{1120}{3077} \right\}, \left\{ -2.51327, \frac{2157}{5671} \right\}, \left\{ -1.88496, \frac{960}{2431} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{1853}{4047} \right\}, \left\{ -0.628319, \frac{1504}{3053} \right\}, \left\{ 0., \frac{693}{1385} \right\}, \left\{ 0.628319, \frac{1507}{3019} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1707}{3824} \right\}, \left\{ 1.88496, \frac{1871}{4795} \right\}, \left\{ 2.51327, \frac{2140}{5873} \right\}, \left\{ \pi, \frac{1120}{3077} \right\} \right\}$

Out[ ]=  $\left\{ \left\{ -\pi, \frac{3077}{4096} \right\}, \left\{ -2.51327, \frac{5671}{8192} \right\}, \left\{ -1.88496, \frac{2431}{4096} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{4047}{8192} \right\}, \left\{ -0.628319, \frac{3053}{8192} \right\}, \left\{ 0., \frac{1385}{4096} \right\}, \left\{ 0.628319, \frac{3019}{8192} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{239}{512} \right\}, \left\{ 1.88496, \frac{4795}{8192} \right\}, \left\{ 2.51327, \frac{5873}{8192} \right\}, \left\{ 3.14159, \frac{3077}{4096} \right\} \right\}$

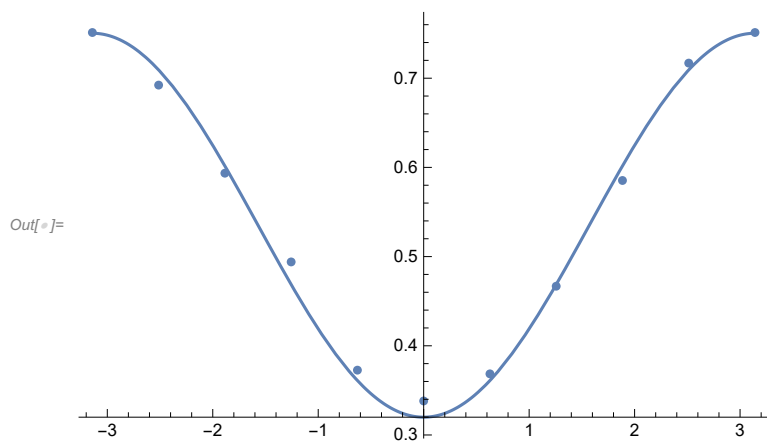




In[ ]:= Show[cosTH, ExpCosSqibmqlima, PlotRange → All]



In[ ]:= Show[decTH, ExpDecisivenessibmqlima]



In[ ]:= (\*ibmq\_qasm\_simulator\*)

ZeroZeroFirst10ibmqqasmsimulator = 2109

ZeroOneFirst10ibmqqasmsimulator = 2013

OneZeroFirst10ibmqqasmsimulator = 4044

OneOneFirst10ibmqqasmsimulator = 26

ZeroZeroFirst08ibmqqasmsimulator = 1994

```
ZeroOneFirst08ibmqqasmsimulator = 2246
OneZeroFirst08ibmqqasmsimulator = 3877
OneOneFirst08ibmqqasmsimulator = 75
```

```
ZeroZeroFirst06ibmqqasmsimulator = 1782
ZeroOneFirst06ibmqqasmsimulator = 3093
OneZeroFirst06ibmqqasmsimulator = 3128
OneOneFirst06ibmqqasmsimulator = 189
```

```
ZeroZeroFirst04ibmqqasmsimulator = 1469
ZeroOneFirst04ibmqqasmsimulator = 4045
OneZeroFirst04ibmqqasmsimulator = 2329
OneOneFirst04ibmqqasmsimulator = 349
```

```
ZeroZeroFirst02ibmqqasmsimulator = 1270
ZeroOneFirst02ibmqqasmsimulator = 4794
OneZeroFirst02ibmqqasmsimulator = 1679
OneOneFirst02ibmqqasmsimulator = 449
```

```
ZeroZeroFirst00ibmqqasmsimulator = 1181
ZeroOneFirst00ibmqqasmsimulator = 5038
OneZeroFirst00ibmqqasmsimulator = 1454
OneOneFirst00ibmqqasmsimulator = 519
```

```
ZeroZeroSecond02ibmqqasmsimulator = 1241
ZeroOneSecond02ibmqqasmsimulator = 4841
OneZeroSecond02ibmqqasmsimulator = 1654
OneOneSecond02ibmqqasmsimulator = 456
```

```
ZeroZeroSecond04ibmqqasmsimulator = 1485
ZeroOneSecond04ibmqqasmsimulator = 3933
OneZeroSecond04ibmqqasmsimulator = 2402
OneOneSecond04ibmqqasmsimulator = 372
```

```
ZeroZeroSecond06ibmqqasmsimulator = 1753
ZeroOneSecond06ibmqqasmsimulator = 3054
OneZeroSecond06ibmqqasmsimulator = 3186
OneOneSecond06ibmqqasmsimulator = 199
```

```
ZeroZeroSecond08ibmqqasmsimulator = 1903
ZeroOneSecond08ibmqqasmsimulator = 2274
OneZeroSecond08ibmqqasmsimulator = 3922
OneOneSecond08ibmqqasmsimulator = 93
```

```
ZeroZeroSecond10ibmqqasmsimulator = 2109
ZeroOneSecond10ibmqqasmsimulator = 2013
OneZeroSecond10ibmqqasmsimulator = 4044
OneOneSecond10ibmqqasmsimulator = 26
```

```
CosSqibmqqasmsimulator = {{-1 *  $\pi$ , ZeroZeroSecond10ibmqqasmsimulator /
  (OneZeroSecond10ibmqqasmsimulator + ZeroZeroSecond10ibmqqasmsimulator)},
```



```

{-0.8 *  $\pi$ , ZeroZeroSecond08ibmqqasmsimulator /
  (OneZeroSecond08ibmqqasmsimulator + ZeroZeroSecond08ibmqqasmsimulator)},
{-0.6 *  $\pi$ , ZeroZeroSecond06ibmqqasmsimulator /
  (OneZeroSecond06ibmqqasmsimulator + ZeroZeroSecond06ibmqqasmsimulator)},
{-0.4 *  $\pi$ , ZeroZeroSecond04ibmqqasmsimulator /
  (OneZeroSecond04ibmqqasmsimulator + ZeroZeroSecond04ibmqqasmsimulator)},
{-0.2 *  $\pi$ , ZeroZeroSecond02ibmqqasmsimulator /
  (OneZeroSecond02ibmqqasmsimulator + ZeroZeroSecond02ibmqqasmsimulator)},
{0.0 *  $\pi$ , ZeroZeroFirst00ibmqqasmsimulator /
  (OneZeroFirst00ibmqqasmsimulator + ZeroZeroFirst00ibmqqasmsimulator)},
{0.2 *  $\pi$ , ZeroZeroFirst02ibmqqasmsimulator /
  (OneZeroFirst02ibmqqasmsimulator + ZeroZeroFirst02ibmqqasmsimulator)},
{0.4 *  $\pi$ , ZeroZeroFirst04ibmqqasmsimulator /
  (OneZeroFirst04ibmqqasmsimulator + ZeroZeroFirst04ibmqqasmsimulator)},
{0.6 *  $\pi$ , ZeroZeroFirst06ibmqqasmsimulator /
  (OneZeroFirst06ibmqqasmsimulator + ZeroZeroFirst06ibmqqasmsimulator)},
{0.8 *  $\pi$ , ZeroZeroFirst08ibmqqasmsimulator /
  (OneZeroFirst08ibmqqasmsimulator + ZeroZeroFirst08ibmqqasmsimulator)},
{1 *  $\pi$ , ZeroZeroFirst10ibmqqasmsimulator /
  (OneZeroFirst10ibmqqasmsimulator + ZeroZeroFirst10ibmqqasmsimulator)}}
Decisivenessibmqqasmsimulator = {{-1 *  $\pi$ ,
  (OneZeroSecond10ibmqqasmsimulator + ZeroZeroSecond10ibmqqasmsimulator) / 8192},
{-0.8 *  $\pi$ , (OneZeroSecond08ibmqqasmsimulator + ZeroZeroSecond08ibmqqasmsimulator) / 8192},
{-0.6 *  $\pi$ , (OneZeroSecond06ibmqqasmsimulator + ZeroZeroSecond06ibmqqasmsimulator) / 8192},
{-0.4 *  $\pi$ , (OneZeroSecond04ibmqqasmsimulator + ZeroZeroSecond04ibmqqasmsimulator) / 8192},
{-0.2 *  $\pi$ , (OneZeroSecond02ibmqqasmsimulator + ZeroZeroSecond02ibmqqasmsimulator) / 8192},
{-0.0 *  $\pi$ , (OneZeroFirst00ibmqqasmsimulator + ZeroZeroFirst00ibmqqasmsimulator) / 8192},
{0.2 *  $\pi$ , (OneZeroFirst02ibmqqasmsimulator + ZeroZeroFirst02ibmqqasmsimulator) / 8192},
{0.4 *  $\pi$ , (OneZeroFirst04ibmqqasmsimulator + ZeroZeroFirst04ibmqqasmsimulator) / 8192},
{0.6 *  $\pi$ , (OneZeroFirst06ibmqqasmsimulator + ZeroZeroFirst06ibmqqasmsimulator) / 8192},
{0.8 *  $\pi$ , (OneZeroFirst08ibmqqasmsimulator + ZeroZeroFirst08ibmqqasmsimulator) / 8192},
{1.0 *  $\pi$ , (OneZeroFirst10ibmqqasmsimulator + ZeroZeroFirst10ibmqqasmsimulator) / 8192}}
ExpCosSqibmqqasmsimulator = ListPlot[CosSqibmqqasmsimulator]
ExpDecisivenessibmqqasmsimulator = ListPlot[Decisivenessibmqqasmsimulator]

```

Out[ ]= 2109

Out[ ]= 2013

Out[ ]= 4044

Out[ ]= 26

Out[ ]= 1994

Out[ ]= 2246

Out[ ]= 3877

Out[ ]= 75

Out[ ]= 1782

Out[ ]= 3093

Out[ ]= 3128

Out[ ]= 189

Out[ ]= 1469

Out[ ]= 4045

Out[ ]= 2329

Out[ ]= 349

Out[ ]= 1270

Out[ ]= 4794

Out[ ]= 1679

Out[ ]= 449

Out[ ]= 1181

Out[ ]= 5038

Out[ ]= 1454

Out[ ]= 519

Out[ ]= 1241

Out[ ]= 4841

Out[ ]= 1654

Out[ ]= 456

Out[ ]= 1485

Out[ ]= 3933

Out[ ]= 2402

Out[ ]= 372

Out[ ]= 1753

Out[ ]= 3054

Out[ ]= 3186

Out[ ]= 199

Out[ ]= 1903

Out[ ]= 2274

Out[ ]= 3922

Out[ ]= 93

Out[ ]= 2109

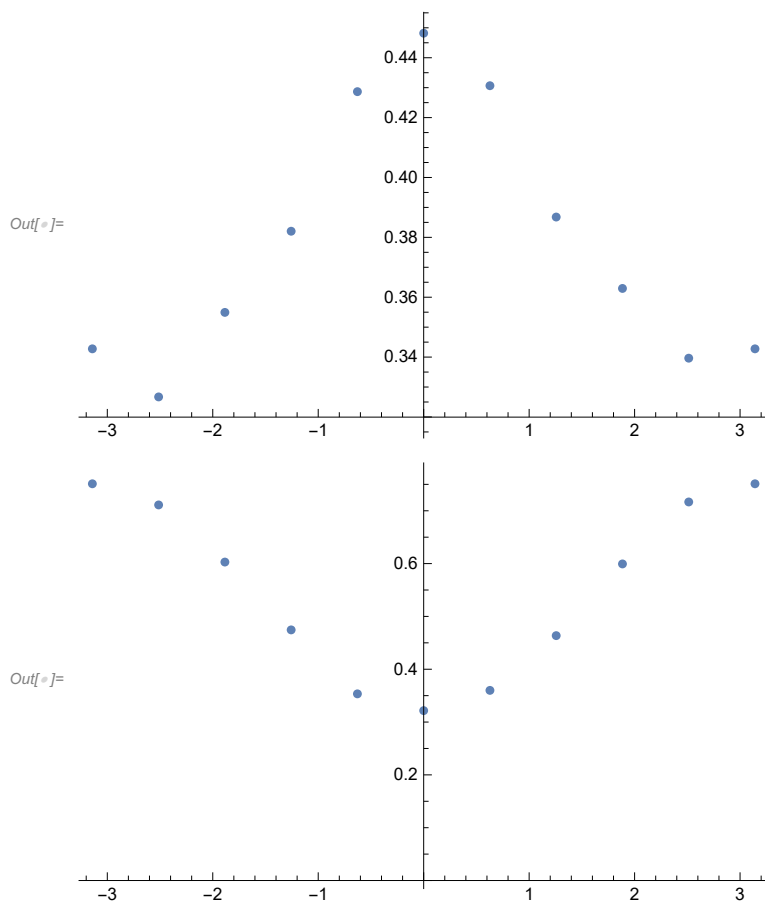
Out[ ]= 2013

Out[ ]= 4044

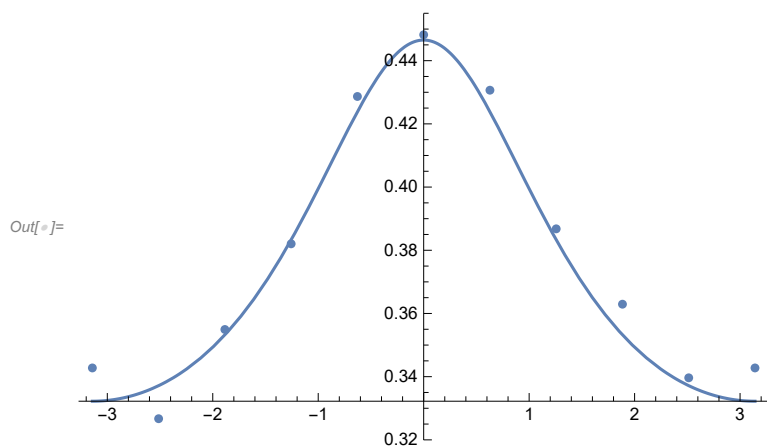
Out[ ]= 26

$$\text{Out[ ]} = \left\{ \left\{ -\pi, \frac{703}{2051} \right\}, \left\{ -2.51327, \frac{1903}{5825} \right\}, \left\{ -1.88496, \frac{1753}{4939} \right\}, \right. \\ \left. \left\{ -1.25664, \frac{1485}{3887} \right\}, \left\{ -0.628319, \frac{1241}{2895} \right\}, \left\{ 0., \frac{1181}{2635} \right\}, \left\{ 0.628319, \frac{1270}{2949} \right\}, \right. \\ \left. \left\{ 1.25664, \frac{1469}{3798} \right\}, \left\{ 1.88496, \frac{891}{2455} \right\}, \left\{ 2.51327, \frac{1994}{5871} \right\}, \left\{ \pi, \frac{703}{2051} \right\} \right\}$$

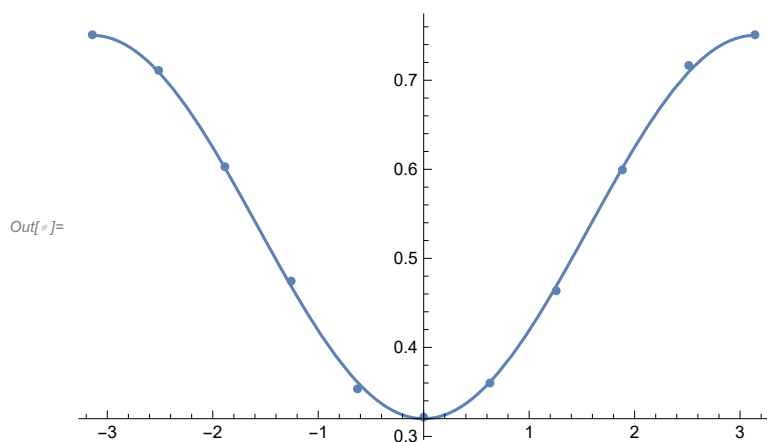
$$\text{Out[ ]} = \left\{ \left\{ -\pi, \frac{6153}{8192} \right\}, \left\{ -2.51327, \frac{5825}{8192} \right\}, \left\{ -1.88496, \frac{4939}{8192} \right\}, \right. \\ \left. \left\{ -1.25664, \frac{3887}{8192} \right\}, \left\{ -0.628319, \frac{2895}{8192} \right\}, \left\{ 0., \frac{2635}{8192} \right\}, \left\{ 0.628319, \frac{2949}{8192} \right\}, \right. \\ \left. \left\{ 1.25664, \frac{1899}{4096} \right\}, \left\{ 1.88496, \frac{2455}{4096} \right\}, \left\{ 2.51327, \frac{5871}{8192} \right\}, \left\{ 3.14159, \frac{6153}{8192} \right\} \right\}$$



```
In[ ]:= Show[cosTH, ExpCosSqibmqqasmsimulator, PlotRange -> All]
```



```
In[ ]:= Show[decTH, ExpDecisivenessibmqqasmsimulator, PlotRange -> All]
```



```
In[ ]:= (*ibmq_belem*)
```

```
ZeroZeroFirst10ibmqbelem = 2320
```

```
ZeroOneFirst10ibmqbelem = 2192
```

```
OneZeroFirst10ibmqbelem = 3342
```

```
OneOneFirst10ibmqbelem = 338
```

```
ZeroZeroFirst08ibmqbelem = 2169
```

```
ZeroOneFirst08ibmqbelem = 2626
```

```
OneZeroFirst08ibmqbelem = 3013
```

```
OneOneFirst08ibmqbelem = 384
```

```
ZeroZeroFirst06ibmqbelem = 2010
```

```
ZeroOneFirst06ibmqbelem = 3179
```

```
OneZeroFirst06ibmqbelem = 2455
```

```
OneOneFirst06ibmqbelem = 548
```

```
ZeroZeroFirst04ibmqbelem = 1795
```

```
ZeroOneFirst04ibmqbelem = 3834
```

```
OneZeroFirst04ibmqbelem = 1896
```

```
OneOneFirst04ibmqbelem = 667
```

ZeroZeroFirst02ibmqbelem = 1570  
 ZeroOneFirst02ibmqbelem = 4232  
 OneZeroFirst02ibmqbelem = 1625  
 OneOneFirst02ibmqbelem = 765

ZeroZeroFirst00ibmqbelem = 1419  
 ZeroOneFirst00ibmqbelem = 4415  
 OneZeroFirst00ibmqbelem = 1538  
 OneOneFirst00ibmqbelem = 820

ZeroZeroSecond02ibmqbelem = 1487  
 ZeroOneSecond02ibmqbelem = 4123  
 OneZeroSecond02ibmqbelem = 1944  
 OneOneSecond02ibmqbelem = 638

ZeroZeroSecond04ibmqbelem = 1706  
 ZeroOneSecond04ibmqbelem = 3556  
 OneZeroSecond04ibmqbelem = 2413  
 OneOneSecond04ibmqbelem = 517

ZeroZeroSecond06ibmqbelem = 2009  
 ZeroOneSecond06ibmqbelem = 2946  
 OneZeroSecond06ibmqbelem = 2828  
 OneOneSecond06ibmqbelem = 409

ZeroZeroSecond08ibmqbelem = 2160  
 ZeroOneSecond08ibmqbelem = 2526  
 OneZeroSecond08ibmqbelem = 3162  
 OneOneSecond08ibmqbelem = 344

ZeroZeroSecond10ibmqbelem = 2320  
 ZeroOneSecond10ibmqbelem = 2192  
 OneZeroSecond10ibmqbelem = 3342  
 OneOneSecond10ibmqbelem = 338

CosSqibmqbelem =  $\{ \{-1 * \pi,$   
 $\text{ZeroZeroSecond10ibmqbelem} / (\text{OneZeroSecond10ibmqbelem} + \text{ZeroZeroSecond10ibmqbelem}) \},$   
 $\{-0.8 * \pi, \text{ZeroZeroSecond08ibmqbelem} /$   
 $(\text{OneZeroSecond08ibmqbelem} + \text{ZeroZeroSecond08ibmqbelem}) \}, \{-0.6 * \pi,$   
 $\text{ZeroZeroSecond06ibmqbelem} / (\text{OneZeroSecond06ibmqbelem} + \text{ZeroZeroSecond06ibmqbelem}) \},$   
 $\{-0.4 * \pi, \text{ZeroZeroSecond04ibmqbelem} /$   
 $(\text{OneZeroSecond04ibmqbelem} + \text{ZeroZeroSecond04ibmqbelem}) \}, \{-0.2 * \pi,$   
 $\text{ZeroZeroSecond02ibmqbelem} / (\text{OneZeroSecond02ibmqbelem} + \text{ZeroZeroSecond02ibmqbelem}) \},$   
 $\{0.0 * \pi, \text{ZeroZeroFirst00ibmqbelem} / (\text{OneZeroFirst00ibmqbelem} + \text{ZeroZeroFirst00ibmqbelem}) \},$   
 $\{0.2 * \pi, \text{ZeroZeroFirst02ibmqbelem} / (\text{OneZeroFirst02ibmqbelem} + \text{ZeroZeroFirst02ibmqbelem}) \},$   
 $\{0.4 * \pi, \text{ZeroZeroFirst04ibmqbelem} / (\text{OneZeroFirst04ibmqbelem} + \text{ZeroZeroFirst04ibmqbelem}) \},$   
 $\{0.6 * \pi, \text{ZeroZeroFirst06ibmqbelem} / (\text{OneZeroFirst06ibmqbelem} + \text{ZeroZeroFirst06ibmqbelem}) \},$   
 $\{0.8 * \pi, \text{ZeroZeroFirst08ibmqbelem} / (\text{OneZeroFirst08ibmqbelem} + \text{ZeroZeroFirst08ibmqbelem}) \},$   
 $\{1 * \pi, \text{ZeroZeroFirst10ibmqbelem} / (\text{OneZeroFirst10ibmqbelem} + \text{ZeroZeroFirst10ibmqbelem}) \} \}$

```

Decisivenessibmqbelem =
{ {-1 *  $\pi$ , (OneZeroSecond10ibmqbelem + ZeroZeroSecond10ibmqbelem) / 8192},
  {-0.8 *  $\pi$ , (OneZeroSecond08ibmqbelem + ZeroZeroSecond08ibmqbelem) / 8192},
  {-0.6 *  $\pi$ , (OneZeroSecond06ibmqbelem + ZeroZeroSecond06ibmqbelem) / 8192},
  {-0.4 *  $\pi$ , (OneZeroSecond04ibmqbelem + ZeroZeroSecond04ibmqbelem) / 8192},
  {-0.2 *  $\pi$ , (OneZeroSecond02ibmqbelem + ZeroZeroSecond02ibmqbelem) / 8192},
  {-0.0 *  $\pi$ , (OneZeroFirst00ibmqbelem + ZeroZeroFirst00ibmqbelem) / 8192},
  {0.2 *  $\pi$ , (OneZeroFirst02ibmqbelem + ZeroZeroFirst02ibmqbelem) / 8192},
  {0.4 *  $\pi$ , (OneZeroFirst04ibmqbelem + ZeroZeroFirst04ibmqbelem) / 8192},
  {0.6 *  $\pi$ , (OneZeroFirst06ibmqbelem + ZeroZeroFirst06ibmqbelem) / 8192},
  {0.8 *  $\pi$ , (OneZeroFirst08ibmqbelem + ZeroZeroFirst08ibmqbelem) / 8192},
  {1.0 *  $\pi$ , (OneZeroFirst10ibmqbelem + ZeroZeroFirst10ibmqbelem) / 8192}}
ExpCosSqibmqbelem = ListPlot[CosSqibmqbelem]
ExpDecisivenessibmqbelem = ListPlot[Decisivenessibmqbelem]

```

Out[ ]= 2320

Out[ ]= 2192

Out[ ]= 3342

Out[ ]= 338

Out[ ]= 2169

Out[ ]= 2626

Out[ ]= 3013

Out[ ]= 384

Out[ ]= 2010

Out[ ]= 3179

Out[ ]= 2455

Out[ ]= 548

Out[ ]= 1795

Out[ ]= 3834

Out[ ]= 1896

Out[ ]= 667

Out[ ]= 1570

Out[ ]= 4232

Out[ ]= 1625

Out[ ]= 765

Out[ ]= 1419

Out[ ]= 4415

$$\text{Out}[*]= 1538$$

$$\text{Out}[*]= 820$$

$$\text{Out}[*]= 1487$$

$$\text{Out}[*]= 4123$$

$$\text{Out}[*]= 1944$$

$$\text{Out}[*]= 638$$

$$\text{Out}[*]= 1706$$

$$\text{Out}[*]= 3556$$

$$\text{Out}[*]= 2413$$

$$\text{Out}[*]= 517$$

$$\text{Out}[*]= 2009$$

$$\text{Out}[*]= 2946$$

$$\text{Out}[*]= 2828$$

$$\text{Out}[*]= 409$$

$$\text{Out}[*]= 2160$$

$$\text{Out}[*]= 2526$$

$$\text{Out}[*]= 3162$$

$$\text{Out}[*]= 344$$

$$\text{Out}[*]= 2320$$

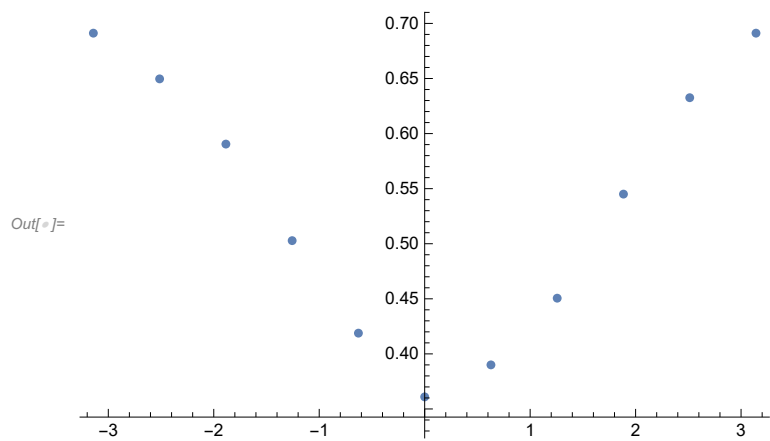
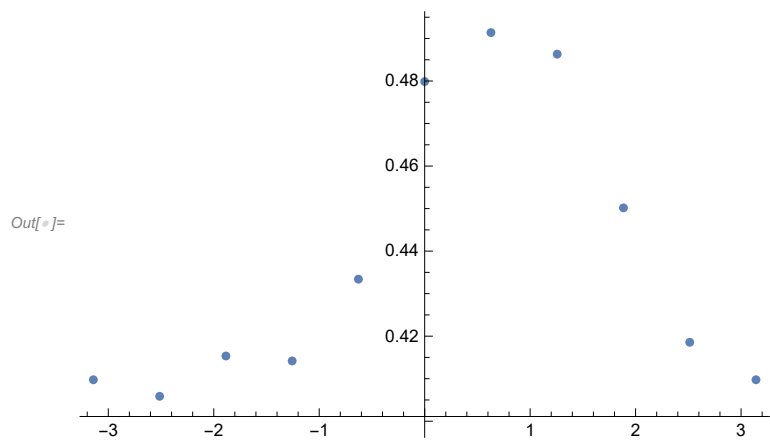
$$\text{Out}[*]= 2192$$

$$\text{Out}[*]= 3342$$

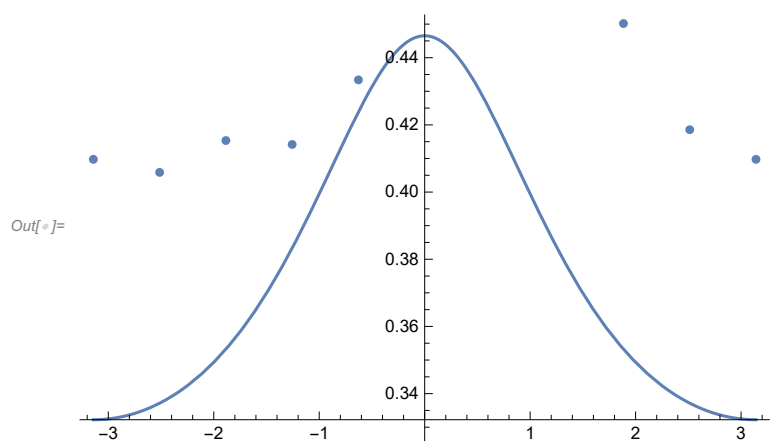
$$\text{Out}[*]= 338$$

$$\begin{aligned} \text{Out}[*]= & \left\{ \left\{ -\pi, \frac{1160}{2831} \right\}, \left\{ -2.51327, \frac{360}{887} \right\}, \left\{ -1.88496, \frac{287}{691} \right\}, \right. \\ & \left\{ -1.25664, \frac{1706}{4119} \right\}, \left\{ -0.628319, \frac{1487}{3431} \right\}, \left\{ 0., \frac{1419}{2957} \right\}, \left\{ 0.628319, \frac{314}{639} \right\}, \\ & \left. \left\{ 1.25664, \frac{1795}{3691} \right\}, \left\{ 1.88496, \frac{402}{893} \right\}, \left\{ 2.51327, \frac{2169}{5182} \right\}, \left\{ \pi, \frac{1160}{2831} \right\} \right\} \end{aligned}$$

$$\begin{aligned} \text{Out}[*]= & \left\{ \left\{ -\pi, \frac{2831}{4096} \right\}, \left\{ -2.51327, \frac{2661}{4096} \right\}, \left\{ -1.88496, \frac{4837}{8192} \right\}, \right. \\ & \left\{ -1.25664, \frac{4119}{8192} \right\}, \left\{ -0.628319, \frac{3431}{8192} \right\}, \left\{ 0., \frac{2957}{8192} \right\}, \left\{ 0.628319, \frac{3195}{8192} \right\}, \\ & \left. \left\{ 1.25664, \frac{3691}{8192} \right\}, \left\{ 1.88496, \frac{4465}{8192} \right\}, \left\{ 2.51327, \frac{2591}{4096} \right\}, \left\{ 3.14159, \frac{2831}{4096} \right\} \right\} \end{aligned}$$

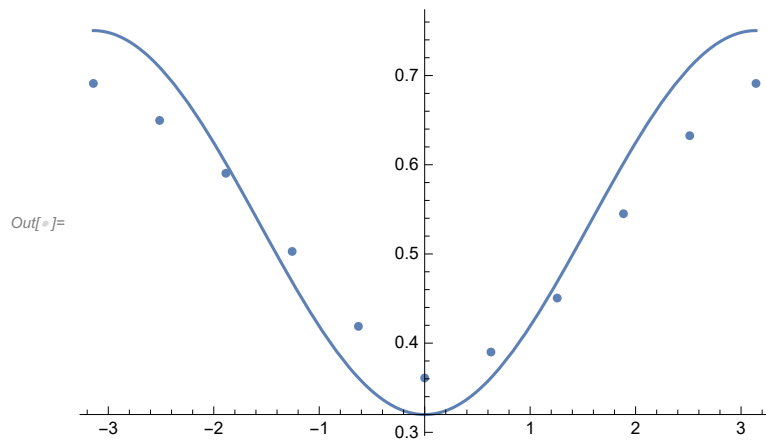


In[ ]:= Show[cosTH, ExpCosSqibmqbelem]





In[ ]:= Show[decTH, ExpDecisivenessibmqbelem]

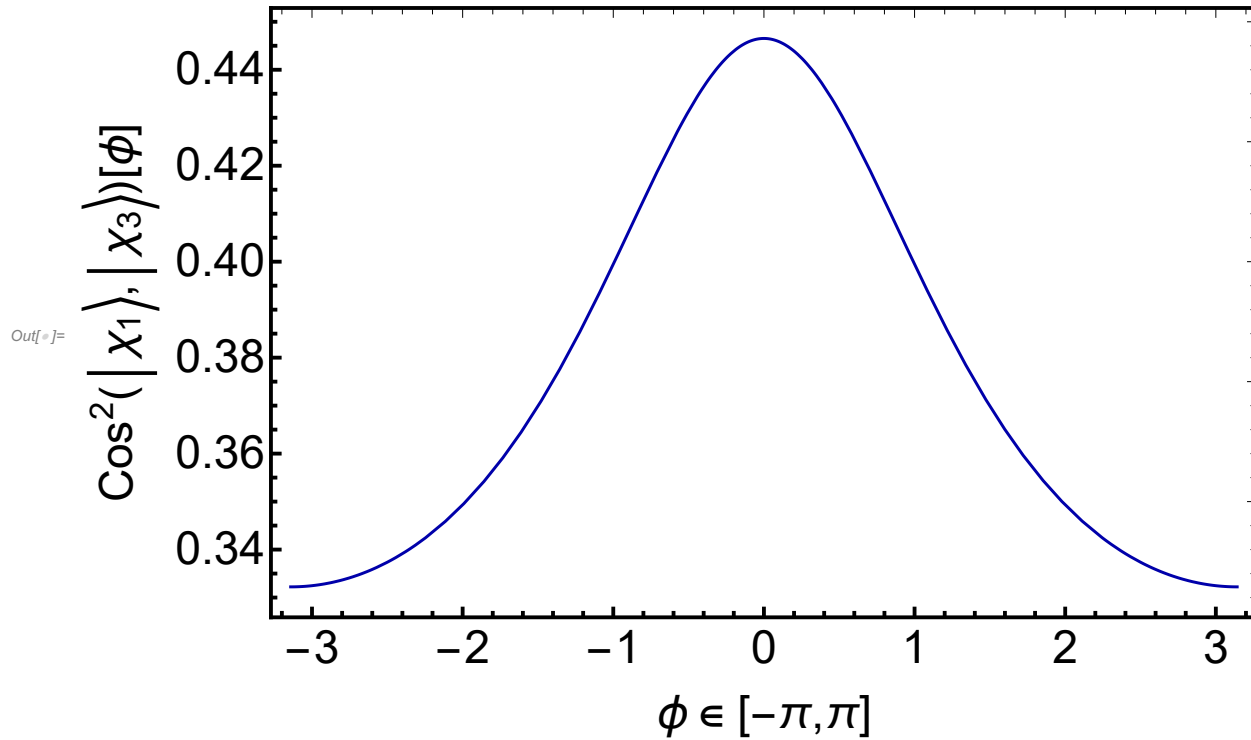




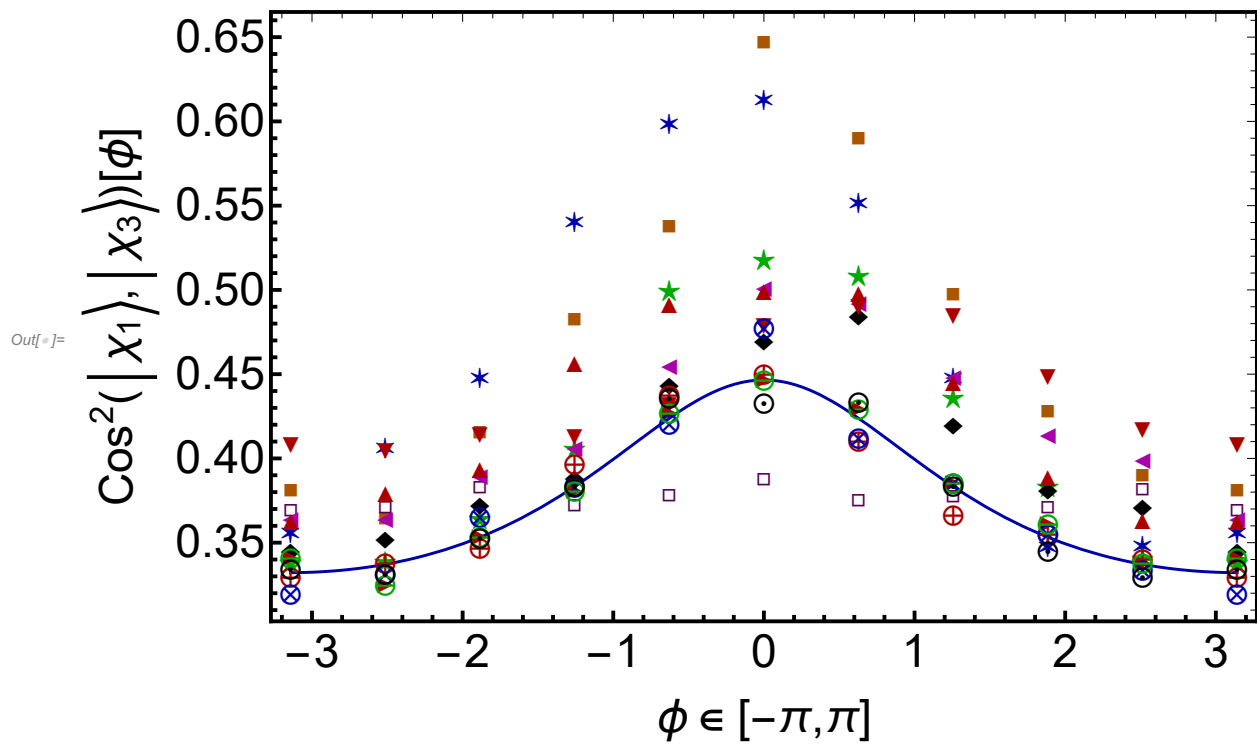
```

In[ ]:= CosSqTheory = Plot[1 - N[cosThirdFunction[-x, 6 / 5,  $\pi/2 - 1$ , 1]], {x, - $\pi$ ,  $\pi$ },
  PlotRange -> All, PlotStyle -> {Directive[Darker[Blue], Thickness[0.003]}],
  Frame -> True, FrameStyle -> Directive[Black, Thick], Frame -> True,
  FrameStyle -> Directive[Black, Thick], LabelStyle -> Large, Axes -> False,
  PlotStyle -> {Directive[Darker[Green], Thickness[0.007]}],
  FrameLabel -> {{ $\text{"Cos}^2(|\chi_1\rangle, |\chi_3\rangle)[\phi]$ }, {" $\phi \in [-\pi, \pi]$ ", ""}},
  LabelStyle -> {FontWeight -> "Bold", FontSize -> 25},
  ImageSize -> 650, GridLinesStyle -> Directive[Thick, Gray]]

```



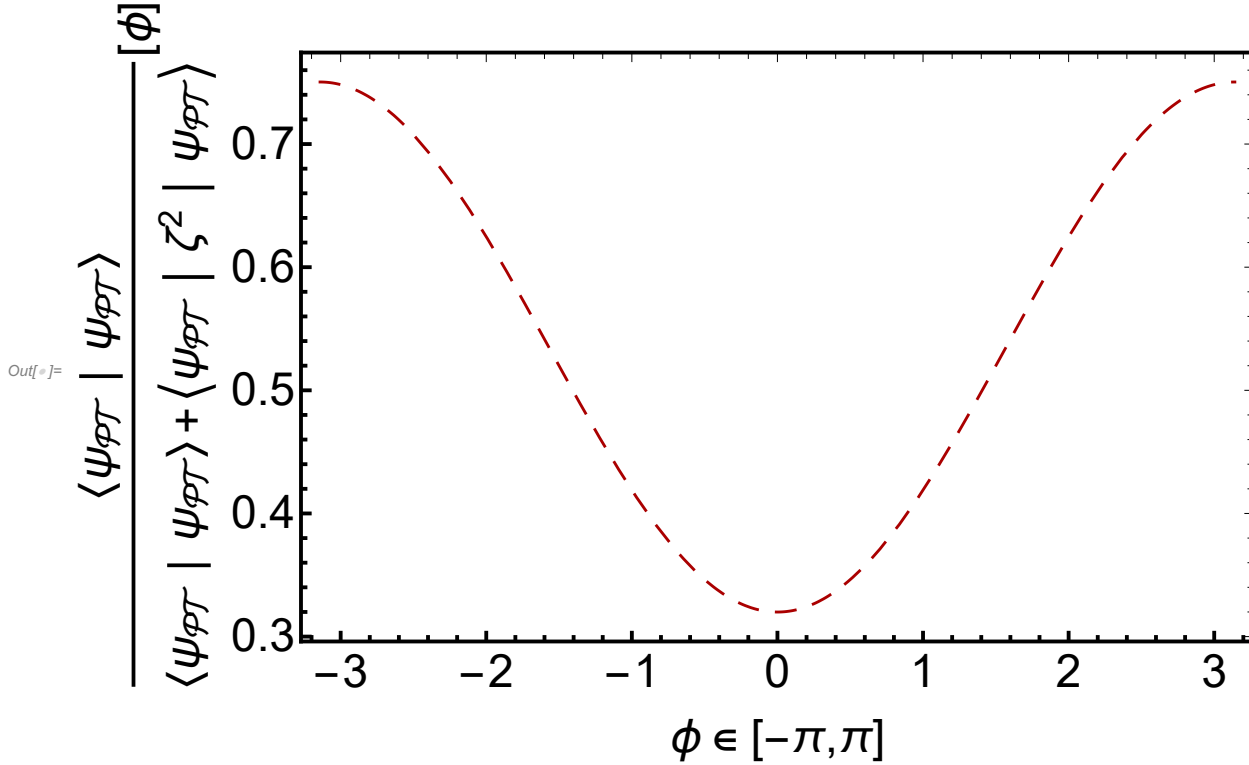
```
In[ ]:= p1 = Show[CosSqTheory, CosSqExperiment, PlotRange -> All]
```



```

In[ ]:= DecisivenessTheory = Plot[DecisivenessThirdFunction[-x, 6 / 5,  $\pi/2 - 1$ , 2], {x, - $\pi$ ,  $\pi$ },
  PlotRange -> All, PlotStyle -> {Directive[Darker[Red], Dashing[0.02], Thickness[0.003]]},
  Frame -> True, FrameStyle -> Directive[Black, Thick], Frame -> True,
  FrameStyle -> Directive[Black, Thick], LabelStyle -> Large,
  PlotStyle -> {Directive[Darker[Green], Thickness[0.007]]}, Axes -> False,
  FrameLabel -> {{ $\frac{\langle \psi_{\phi\mathcal{T}} | \psi_{\phi\mathcal{T}} \rangle}{\langle \psi_{\phi\mathcal{T}} | \psi_{\phi\mathcal{T}} \rangle + \langle \psi_{\phi\mathcal{T}} | \xi^2 | \psi_{\phi\mathcal{T}} \rangle} [\phi]$ }, {" $\phi \in [-\pi, \pi]$ ", ""}},
  LabelStyle -> {FontWeight -> "Bold", FontSize -> 25},
  ImageSize -> 650, GridLinesStyle -> Directive[Thick, Gray]]

```

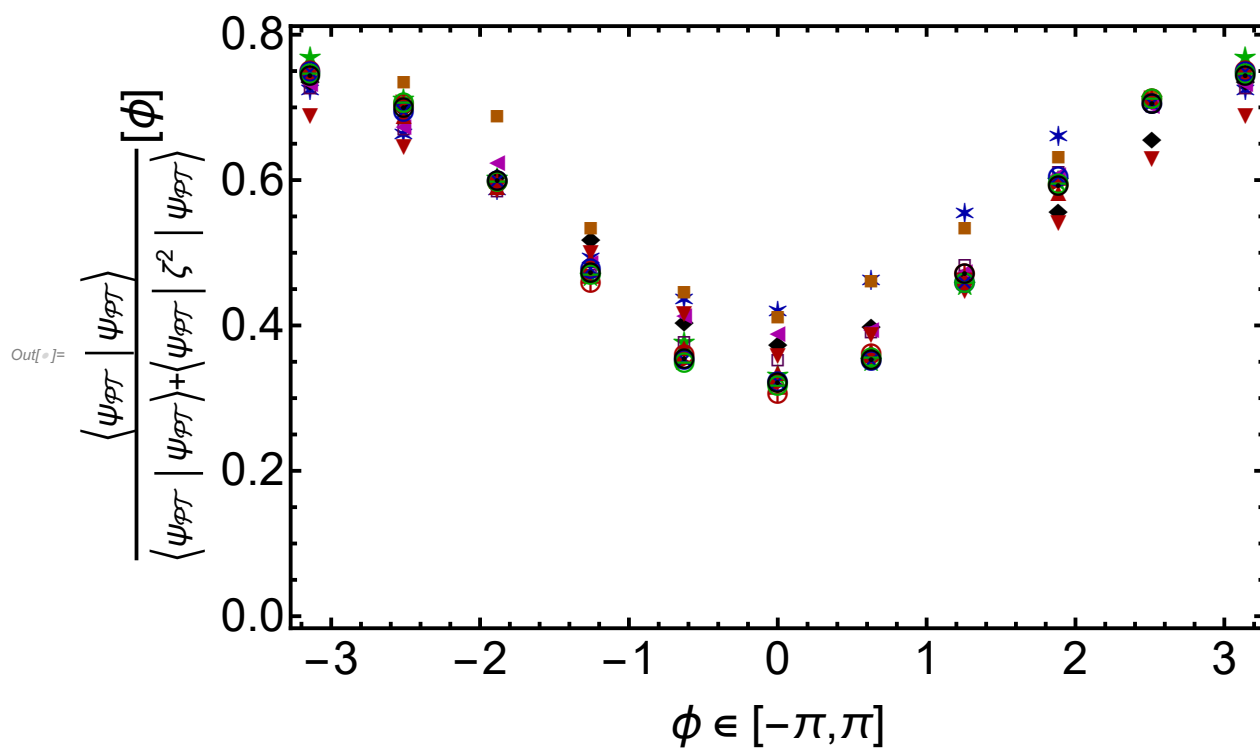


```

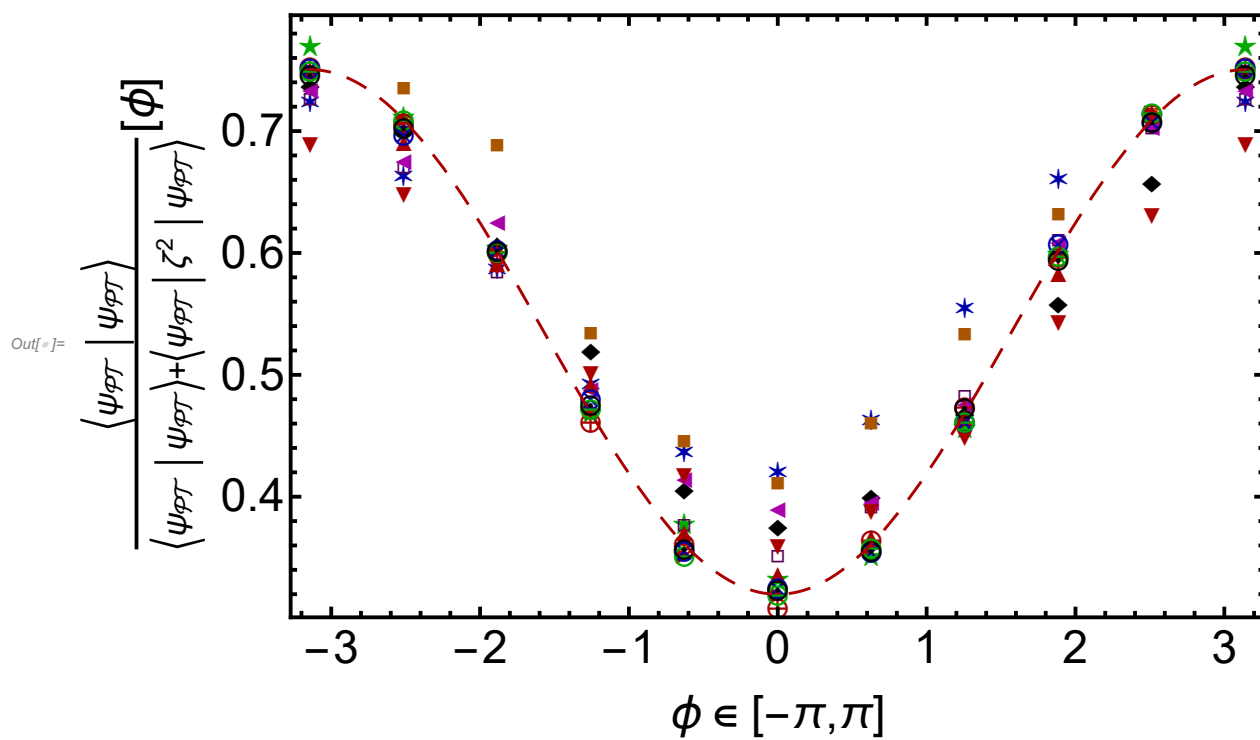
In[ ]:= DecisivenessExperiment =
ListPlot[{Decisivenessibmperth, Decisivenessibmqjakarta, Decisivenessibmlagos,
Decisivenessibmnairobi, Decisivenessibmoslo, Decisivenessibmqmanila,
Decisivenessibmqquito, Decisivenessibmqbelem, Decisivenessibmqlima,
Decisivenesssimulatormps, Decisivenesssimulatorextendedstabilizer,
Decisivenessibmqqasmsimulator, Decisivenesssimulatorstatevector},
PlotStyle → {Directive[Darker[Blue], Thickness[0.007]],
Directive[Darker[Green], Dashing[0.02], Thickness[0.007]], Directive[Darker[Black],
Thickness[0.005], Dotted], Directive[Darker[Orange], Thickness[0.007], Dashed],
Directive[Darker[Purple], Thickness[0.003]], Directive[Cross, Darker[Magenta],
Thickness[0.003]], Directive[Darker[Red], Dashing[0.02], Thickness[0.007]],
Directive[Darker[Red], Dashing[0.02], Thickness[0.007]],
Directive[Darker[Red], Dashing[0.02], Thickness[0.007]],
Directive[Darker[Red], Dashing[0.02], Thickness[0.007]]},
PlotLegends → LineLegend[{"ibm_perth", "ibmq_jakarta", "ibm_lagos",
"ibm_nairobi", "ibm_oslo", "ibmq_manila", "ibmq_quito", "ibmq_belem",
"ibmq_lima", "simulator_mps", "simulator_extended_stabilizer",
"ibmq_qasm_simulator", "simulator_statevector"}, LegendFunction → Framed],
Frame → True, FrameStyle → Directive[Black, Thick], LabelStyle → Large,
PlotStyle → {Directive[Darker[Green], Thickness[0.007]]}, Axes → False,
FrameLabel → {{

$$\frac{\langle \psi_{PT} | \psi_{PT} \rangle}{\langle \psi_{PT} | \psi_{PT} \rangle + \langle \psi_{PT} | \xi^2 | \psi_{PT} \rangle} [\phi], \}, {"\phi \in [-\pi, \pi]", ""}},
LabelStyle → {FontWeight → "Bold", FontSize → 25},
ImageSize → 650, GridLinesStyle → Directive[Thick, Gray],
PlotMarkers → {{{"★", 15}, {"★", 15}, {"◆", 15}, {"■", 15}, {"□", 15}, {"◀", 15},
{"▶", 15}, {"▼", 15}, {"▲", 15}, {"⊕", 15}, {"⊗", 15}, {"⊖", 15}, {"⊙", 15}}]$$

```



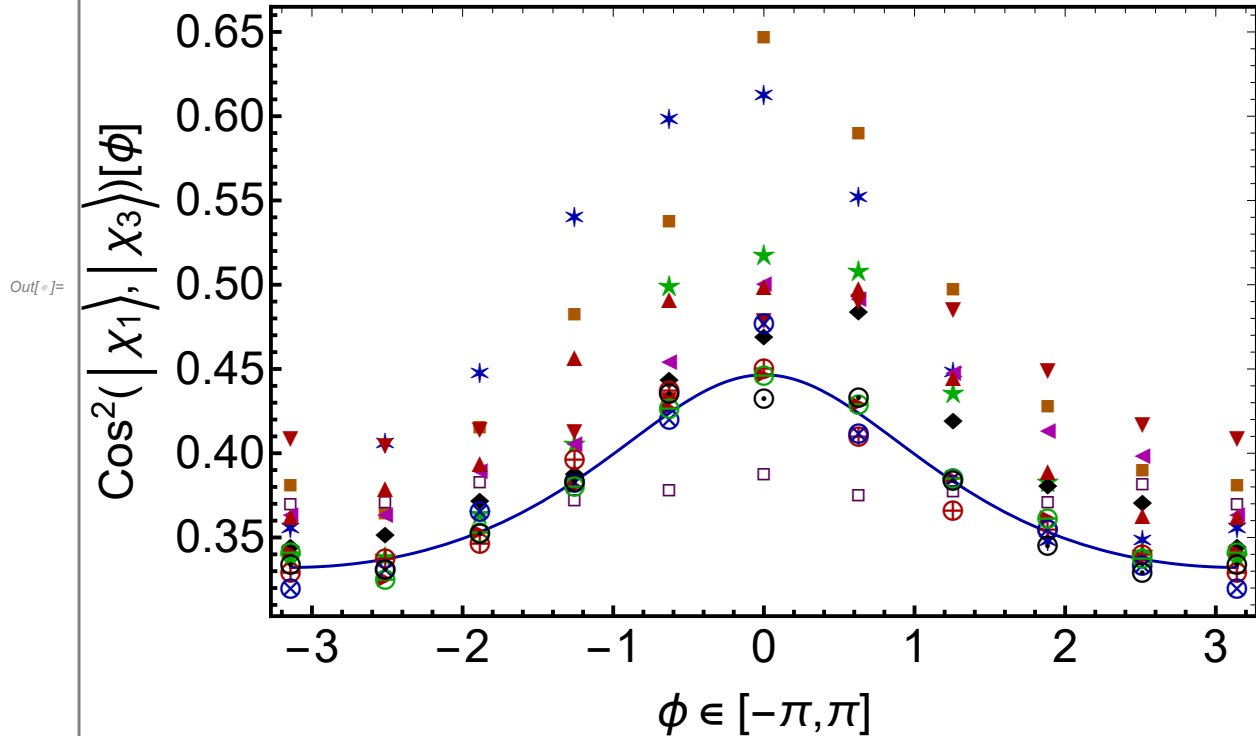
In[ ]:= p2 = Show[DecisivenessExperiment, DecisivenessTheory, PlotRange → All]



```

In[ ]:= title = Panel[Style["First stage,  $\sigma = \frac{6}{5}$ ,  $\Delta = \frac{\sigma}{4}$ ,  $\alpha = \frac{\pi}{2} - 1$ ,  $\mathcal{N}(\theta) \approx \mathcal{N}_{\min}$ ", White, 20],
      ImageSize → 500, Background → Blue, Alignment → Center];
DependenceVariation = Deploy@Grid[{{title, SpanFromLeft}, {p1, p2}},
  Dividers → Gray, Spacings → {0, 0}]

```



```

In[ ]:= Export["First65Three_8_9_2023.png", DependenceVariation, ImageSize → 10000]

```

```

Out[ ]:= First65Three_8_9_2023.png

```

```

In[ ]:= (*ibm_perth*)
ZeroZeroFirst10ibmperth = 2115
ZeroOneFirst10ibmperth = 2007
OneZeroFirst10ibmperth = 3822
OneOneFirst10ibmperth = 248

```

```

ZeroZeroFirst08ibmperth = 2032
ZeroOneFirst08ibmperth = 2141
OneZeroFirst08ibmperth = 3795
OneOneFirst08ibmperth = 224

```

```

ZeroZeroFirst06ibmperth = 1885
ZeroOneFirst06ibmperth = 2471
OneZeroFirst06ibmperth = 3530

```



OneOneFirst06ibmpertth = 306

ZeroZeroFirst04ibmpertth = 2040

ZeroOneFirst04ibmpertth = 3154

OneZeroFirst04ibmpertth = 2510

OneOneFirst04ibmpertth = 488

ZeroZeroFirst02ibmpertth = 2098

ZeroOneFirst02ibmpertth = 3726

OneZeroFirst02ibmpertth = 1701

OneOneFirst02ibmpertth = 667

ZeroZeroFirst00ibmpertth = 2112

ZeroOneFirst00ibmpertth = 4011

OneZeroFirst00ibmpertth = 1332

OneOneFirst00ibmpertth = 737

ZeroZeroSecond02ibmpertth = 2143

ZeroOneSecond02ibmpertth = 3844

OneZeroSecond02ibmpertth = 1436

OneOneSecond02ibmpertth = 769

ZeroZeroSecond04ibmpertth = 2186

ZeroOneSecond04ibmpertth = 3453

OneZeroSecond04ibmpertth = 1856

OneOneSecond04ibmpertth = 697

ZeroZeroSecond06ibmpertth = 2157

ZeroOneSecond06ibmpertth = 2814

OneZeroSecond06ibmpertth = 2657

OneOneSecond06ibmpertth = 564

ZeroZeroSecond08ibmpertth = 2212

ZeroOneSecond08ibmpertth = 2397

OneZeroSecond08ibmpertth = 3226

OneOneSecond08ibmpertth = 357

ZeroZeroSecond10ibmpertth = 2115

ZeroOneSecond10ibmpertth = 2007

OneZeroSecond10ibmpertth = 3822

OneOneSecond10ibmpertth = 248

CosSqibmpertth =

$$\begin{aligned} & \{ \{-1 * \pi, \text{ZeroZeroSecond10ibmpertth} / (\text{OneZeroSecond10ibmpertth} + \text{ZeroZeroSecond10ibmpertth})\}, \\ & \{-0.8 * \pi, \text{ZeroZeroSecond08ibmpertth} / \\ & \quad (\text{OneZeroSecond08ibmpertth} + \text{ZeroZeroSecond08ibmpertth})\}, \{-0.6 * \pi, \\ & \quad \text{ZeroZeroSecond06ibmpertth} / (\text{OneZeroSecond06ibmpertth} + \text{ZeroZeroSecond06ibmpertth})\}, \\ & \{-0.4 * \pi, \text{ZeroZeroSecond04ibmpertth} / \\ & \quad (\text{OneZeroSecond04ibmpertth} + \text{ZeroZeroSecond04ibmpertth})\}, \{-0.2 * \pi, \\ & \quad \text{ZeroZeroSecond02ibmpertth} / (\text{OneZeroSecond02ibmpertth} + \text{ZeroZeroSecond02ibmpertth})\}, \\ & \{0.0 * \pi, \text{ZeroZeroFirst00ibmpertth} / (\text{OneZeroFirst00ibmpertth} + \text{ZeroZeroFirst00ibmpertth})\}, \end{aligned}$$

```

{0.2 *  $\pi$ , ZeroZeroFirst02ibmperth / (OneZeroFirst02ibmperth + ZeroZeroFirst02ibmperth)},
{0.4 *  $\pi$ , ZeroZeroFirst04ibmperth / (OneZeroFirst04ibmperth + ZeroZeroFirst04ibmperth)},
{0.6 *  $\pi$ , ZeroZeroFirst06ibmperth / (OneZeroFirst06ibmperth + ZeroZeroFirst06ibmperth)},
{0.8 *  $\pi$ , ZeroZeroFirst08ibmperth / (OneZeroFirst08ibmperth + ZeroZeroFirst08ibmperth)},
{1 *  $\pi$ , ZeroZeroFirst10ibmperth / (OneZeroFirst10ibmperth + ZeroZeroFirst10ibmperth)}}
Decisivenessibmperth =
{-1 *  $\pi$ , (OneZeroSecond10ibmperth + ZeroZeroSecond10ibmperth) / 8192},
{-0.8 *  $\pi$ , (OneZeroSecond08ibmperth + ZeroZeroSecond08ibmperth) / 8192},
{-0.6 *  $\pi$ , (OneZeroSecond06ibmperth + ZeroZeroSecond06ibmperth) / 8192},
{-0.4 *  $\pi$ , (OneZeroSecond04ibmperth + ZeroZeroSecond04ibmperth) / 8192},
{-0.2 *  $\pi$ , (OneZeroSecond02ibmperth + ZeroZeroSecond02ibmperth) / 8192},
{-0.0 *  $\pi$ , (OneZeroFirst00ibmperth + ZeroZeroFirst00ibmperth) / 8192},
{0.2 *  $\pi$ , (OneZeroFirst02ibmperth + ZeroZeroFirst02ibmperth) / 8192},
{0.4 *  $\pi$ , (OneZeroFirst04ibmperth + ZeroZeroFirst04ibmperth) / 8192},
{0.6 *  $\pi$ , (OneZeroFirst06ibmperth + ZeroZeroFirst06ibmperth) / 8192},
{0.8 *  $\pi$ , (OneZeroFirst08ibmperth + ZeroZeroFirst08ibmperth) / 8192},
{1.0 *  $\pi$ , (OneZeroFirst10ibmperth + ZeroZeroFirst10ibmperth) / 8192}}
ExpCosSqibmperth = ListPlot[CosSqibmperth]
ExpDecisivenessibmperth = ListPlot[Decisivenessibmperth]
Show[cosTH, ExpCosSqibmperth]
Show[decTH, ExpDecisivenessibmperth]
(*ibmq_jakarta*)
ZeroZeroFirst10ibmqjakarta = 2137
ZeroOneFirst10ibmqjakarta = 1765
OneZeroFirst10ibmqjakarta = 4174
OneOneFirst10ibmqjakarta = 116

ZeroZeroFirst08ibmqjakarta = 1988
ZeroOneFirst08ibmqjakarta = 2166
OneZeroFirst08ibmqjakarta = 3843
OneOneFirst08ibmqjakarta = 195

ZeroZeroFirst06ibmqjakarta = 1883
ZeroOneFirst06ibmqjakarta = 2942
OneZeroFirst06ibmqjakarta = 3027
OneOneFirst06ibmqjakarta = 340

ZeroZeroFirst04ibmqjakarta = 1633
ZeroOneFirst04ibmqjakarta = 4006
OneZeroFirst04ibmqjakarta = 2111
OneOneFirst04ibmqjakarta = 442

ZeroZeroFirst02ibmqjakarta = 1468
ZeroOneFirst02ibmqjakarta = 4693
OneZeroFirst02ibmqjakarta = 1418
OneOneFirst02ibmqjakarta = 613

ZeroZeroFirst00ibmqjakarta = 1415
ZeroOneFirst00ibmqjakarta = 4851
OneZeroFirst00ibmqjakarta = 1316

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OneOneFirst00ibmqjakarta = 610

ZeroZeroSecond02ibmqjakarta = 1549

ZeroOneSecond02ibmqjakarta = 4585

OneZeroSecond02ibmqjakarta = 1550

OneOneSecond02ibmqjakarta = 508

ZeroZeroSecond04ibmqjakarta = 1560

ZeroOneSecond04ibmqjakarta = 3942

OneZeroSecond04ibmqjakarta = 2285

OneOneSecond04ibmqjakarta = 405

ZeroZeroSecond06ibmqjakarta = 1804

ZeroOneSecond06ibmqjakarta = 3003

OneZeroSecond06ibmqjakarta = 3146

OneOneSecond06ibmqjakarta = 239

ZeroZeroSecond08ibmqjakarta = 1979

ZeroOneSecond08ibmqjakarta = 2215

OneZeroSecond08ibmqjakarta = 3857

OneOneSecond08ibmqjakarta = 141

ZeroZeroSecond10ibmqjakarta = 2137

ZeroOneSecond10ibmqjakarta = 1765

OneZeroSecond10ibmqjakarta = 4174

OneOneSecond10ibmqjakarta = 116

$$\text{CosSqibmqjakarta} = \left\{ \left\{ -1 * \pi, \text{ZeroZeroSecond10ibmqjakarta} / \right. \right. \\
\left. \left( \text{OneZeroSecond10ibmqjakarta} + \text{ZeroZeroSecond10ibmqjakarta} \right) \right\}, \\
\left\{ -0.8 * \pi, \text{ZeroZeroSecond08ibmqjakarta} / \right. \\
\left. \left( \text{OneZeroSecond08ibmqjakarta} + \text{ZeroZeroSecond08ibmqjakarta} \right) \right\}, \\
\left\{ -0.6 * \pi, \text{ZeroZeroSecond06ibmqjakarta} / \left( \text{OneZeroSecond06ibmqjakarta} + \right. \right. \\
\left. \left. \text{ZeroZeroSecond06ibmqjakarta} \right) \right\}, \left\{ -0.4 * \pi, \text{ZeroZeroSecond04ibmqjakarta} / \right. \\
\left. \left( \text{OneZeroSecond04ibmqjakarta} + \text{ZeroZeroSecond04ibmqjakarta} \right) \right\}, \\
\left\{ -0.2 * \pi, \text{ZeroZeroSecond02ibmqjakarta} / \right. \\
\left. \left( \text{OneZeroSecond02ibmqjakarta} + \text{ZeroZeroSecond02ibmqjakarta} \right) \right\}, \left\{ 0.0 * \pi, \right. \\
\left. \text{ZeroZeroFirst00ibmqjakarta} / \left( \text{OneZeroFirst00ibmqjakarta} + \text{ZeroZeroFirst00ibmqjakarta} \right) \right\}, \\
\left\{ 0.2 * \pi, \text{ZeroZeroFirst02ibmqjakarta} / \right. \\
\left. \left( \text{OneZeroFirst02ibmqjakarta} + \text{ZeroZeroFirst02ibmqjakarta} \right) \right\}, \left\{ 0.4 * \pi, \right. \\
\left. \text{ZeroZeroFirst04ibmqjakarta} / \left( \text{OneZeroFirst04ibmqjakarta} + \text{ZeroZeroFirst04ibmqjakarta} \right) \right\}, \\
\left\{ 0.6 * \pi, \text{ZeroZeroFirst06ibmqjakarta} / \right. \\
\left. \left( \text{OneZeroFirst06ibmqjakarta} + \text{ZeroZeroFirst06ibmqjakarta} \right) \right\}, \left\{ 0.8 * \pi, \right. \\
\left. \text{ZeroZeroFirst08ibmqjakarta} / \left( \text{OneZeroFirst08ibmqjakarta} + \text{ZeroZeroFirst08ibmqjakarta} \right) \right\}, \\
\left\{ 1 * \pi, \text{ZeroZeroFirst10ibmqjakarta} / \right. \\
\left. \left( \text{OneZeroFirst10ibmqjakarta} + \text{ZeroZeroFirst10ibmqjakarta} \right) \right\} \}$$

$$\text{Decisivenessibmqjakarta} = \left\{ \left\{ -1 * \pi, \right. \right. \\
\left. \left( \text{OneZeroSecond10ibmqjakarta} + \text{ZeroZeroSecond10ibmqjakarta} \right) / 8192 \right\}, \\
\left\{ -0.8 * \pi, \left( \text{OneZeroSecond08ibmqjakarta} + \text{ZeroZeroSecond08ibmqjakarta} \right) / 8192 \right\}, \\
\left\{ -0.6 * \pi, \left( \text{OneZeroSecond06ibmqjakarta} + \text{ZeroZeroSecond06ibmqjakarta} \right) / 8192 \right\},$$

```

{-0.4 *  $\pi$ , (OneZeroSecond04ibmqjakarta + ZeroZeroSecond04ibmqjakarta) / 8192},
{-0.2 *  $\pi$ , (OneZeroSecond02ibmqjakarta + ZeroZeroSecond02ibmqjakarta) / 8192},
{-0.0 *  $\pi$ , (OneZeroFirst00ibmqjakarta + ZeroZeroFirst00ibmqjakarta) / 8192},
{0.2 *  $\pi$ , (OneZeroFirst02ibmqjakarta + ZeroZeroFirst02ibmqjakarta) / 8192},
{0.4 *  $\pi$ , (OneZeroFirst04ibmqjakarta + ZeroZeroFirst04ibmqjakarta) / 8192},
{0.6 *  $\pi$ , (OneZeroFirst06ibmqjakarta + ZeroZeroFirst06ibmqjakarta) / 8192},
{0.8 *  $\pi$ , (OneZeroFirst08ibmqjakarta + ZeroZeroFirst08ibmqjakarta) / 8192},
{1.0 *  $\pi$ , (OneZeroFirst10ibmqjakarta + ZeroZeroFirst10ibmqjakarta) / 8192}}
ExpCosSqibmqjakarta = ListPlot[CosSqibmqjakarta]
ExpDecisivenessibmqjakarta = ListPlot[Decisivenessibmqjakarta]
Show[cosTH, ExpCosSqibmqjakarta]
Show[decTH, ExpDecisivenessibmqjakarta]
(*ibm_lagos*)
ZeroZeroFirst10ibmlagos = 2093
ZeroOneFirst10ibmlagos = 1961
OneZeroFirst10ibmlagos = 3957
OneOneFirst10ibmlagos = 181

ZeroZeroFirst08ibmlagos = 2008
ZeroOneFirst08ibmlagos = 2453
OneZeroFirst08ibmlagos = 3391
OneOneFirst08ibmlagos = 340

ZeroZeroFirst06ibmlagos = 1752
ZeroOneFirst06ibmlagos = 3135
OneZeroFirst06ibmlagos = 2831
OneOneFirst06ibmlagos = 474

ZeroZeroFirst04ibmlagos = 1619
ZeroOneFirst04ibmlagos = 3875
OneZeroFirst04ibmlagos = 2228
OneOneFirst04ibmlagos = 470

ZeroZeroFirst02ibmlagos = 1595
ZeroOneFirst02ibmlagos = 4372
OneZeroFirst02ibmlagos = 1692
OneOneFirst02ibmlagos = 533

ZeroZeroFirst00ibmlagos = 1451
ZeroOneFirst00ibmlagos = 4573
OneZeroFirst00ibmlagos = 1632
OneOneFirst00ibmlagos = 536

ZeroZeroSecond02ibmlagos = 1483
ZeroOneSecond02ibmlagos = 4302
OneZeroSecond02ibmlagos = 1851
OneOneSecond02ibmlagos = 556

ZeroZeroSecond04ibmlagos = 1663
ZeroOneSecond04ibmlagos = 3464
OneZeroSecond04ibmlagos = 2607

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OneOneSecond04ibmlagos = 458

ZeroZeroSecond06ibmlagos = 1858

ZeroOneSecond06ibmlagos = 2870

OneZeroSecond06ibmlagos = 3119

OneOneSecond06ibmlagos = 345

ZeroZeroSecond08ibmlagos = 2029

ZeroOneSecond08ibmlagos = 2260

OneZeroSecond08ibmlagos = 3719

OneOneSecond08ibmlagos = 184

ZeroZeroSecond10ibmlagos = 2093

ZeroOneSecond10ibmlagos = 1961

OneZeroSecond10ibmlagos = 3957

OneOneSecond10ibmlagos = 181

CosSqibmlagos =

$$\left\{ \begin{aligned} &\{-1 * \pi, \text{ZeroZeroSecond10ibmlagos} / (\text{OneZeroSecond10ibmlagos} + \text{ZeroZeroSecond10ibmlagos})\}, \\ &\{-0.8 * \pi, \text{ZeroZeroSecond08ibmlagos} / \\ &\quad (\text{OneZeroSecond08ibmlagos} + \text{ZeroZeroSecond08ibmlagos})\}, \{-0.6 * \pi, \\ &\quad \text{ZeroZeroSecond06ibmlagos} / (\text{OneZeroSecond06ibmlagos} + \text{ZeroZeroSecond06ibmlagos})\}, \\ &\{-0.4 * \pi, \text{ZeroZeroSecond04ibmlagos} / \\ &\quad (\text{OneZeroSecond04ibmlagos} + \text{ZeroZeroSecond04ibmlagos})\}, \{-0.2 * \pi, \\ &\quad \text{ZeroZeroSecond02ibmlagos} / (\text{OneZeroSecond02ibmlagos} + \text{ZeroZeroSecond02ibmlagos})\}, \\ &\{0.0 * \pi, \text{ZeroZeroFirst00ibmlagos} / (\text{OneZeroFirst00ibmlagos} + \text{ZeroZeroFirst00ibmlagos})\}, \\ &\{0.2 * \pi, \text{ZeroZeroFirst02ibmlagos} / (\text{OneZeroFirst02ibmlagos} + \text{ZeroZeroFirst02ibmlagos})\}, \\ &\{0.4 * \pi, \text{ZeroZeroFirst04ibmlagos} / (\text{OneZeroFirst04ibmlagos} + \text{ZeroZeroFirst04ibmlagos})\}, \\ &\{0.6 * \pi, \text{ZeroZeroFirst06ibmlagos} / (\text{OneZeroFirst06ibmlagos} + \text{ZeroZeroFirst06ibmlagos})\}, \\ &\{0.8 * \pi, \text{ZeroZeroFirst08ibmlagos} / (\text{OneZeroFirst08ibmlagos} + \text{ZeroZeroFirst08ibmlagos})\}, \\ &\{1 * \pi, \text{ZeroZeroFirst10ibmlagos} / (\text{OneZeroFirst10ibmlagos} + \text{ZeroZeroFirst10ibmlagos})\} \end{aligned} \right\}$$

Decisivenessibmlagos =

$$\left\{ \begin{aligned} &\{-1 * \pi, (\text{OneZeroSecond10ibmlagos} + \text{ZeroZeroSecond10ibmlagos}) / 8192\}, \\ &\{-0.8 * \pi, (\text{OneZeroSecond08ibmlagos} + \text{ZeroZeroSecond08ibmlagos}) / 8192\}, \\ &\{-0.6 * \pi, (\text{OneZeroSecond06ibmlagos} + \text{ZeroZeroSecond06ibmlagos}) / 8192\}, \\ &\{-0.4 * \pi, (\text{OneZeroSecond04ibmlagos} + \text{ZeroZeroSecond04ibmlagos}) / 8192\}, \\ &\{-0.2 * \pi, (\text{OneZeroSecond02ibmlagos} + \text{ZeroZeroSecond02ibmlagos}) / 8192\}, \\ &\{-0.0 * \pi, (\text{OneZeroFirst00ibmlagos} + \text{ZeroZeroFirst00ibmlagos}) / 8192\}, \\ &\{0.2 * \pi, (\text{OneZeroFirst02ibmlagos} + \text{ZeroZeroFirst02ibmlagos}) / 8192\}, \\ &\{0.4 * \pi, (\text{OneZeroFirst04ibmlagos} + \text{ZeroZeroFirst04ibmlagos}) / 8192\}, \\ &\{0.6 * \pi, (\text{OneZeroFirst06ibmlagos} + \text{ZeroZeroFirst06ibmlagos}) / 8192\}, \\ &\{0.8 * \pi, (\text{OneZeroFirst08ibmlagos} + \text{ZeroZeroFirst08ibmlagos}) / 8192\}, \\ &\{1.0 * \pi, (\text{OneZeroFirst10ibmlagos} + \text{ZeroZeroFirst10ibmlagos}) / 8192\} \end{aligned} \right\}$$

ExpCosSqibmlagos = ListPlot[CosSqibmlagos]

ExpDecisivenessibmlagos = ListPlot[Decisivenessibmlagos]

Show[cosTH, ExpCosSqibmlagos, PlotRange → All]

Show[decTH, ExpDecisivenessibmlagos]

Out[ ]= 2115

Out[ ]= 2007

Out[ ]= 3822

Out[ ]= 248

Out[ ]= 2032

Out[ ]= 2141

Out[ ]= 3795

Out[ ]= 224

Out[ ]= 1885

Out[ ]= 2471

Out[ ]= 3530

Out[ ]= 306

Out[ ]= 2040

Out[ ]= 3154

Out[ ]= 2510

Out[ ]= 488

Out[ ]= 2098

Out[ ]= 3726

Out[ ]= 1701

Out[ ]= 667

Out[ ]= 2112

Out[ ]= 4011

Out[ ]= 1332

Out[ ]= 737

Out[ ]= 2143

Out[ ]= 3844

Out[ ]= 1436

Out[ ]= 769

Out[ ]= 2186

Out[ ]= 3453

Out[ ]= 1856

Out[ ]= 697

Out[ ]= 2157

Out[ ]= 2814

Out[ ]= 2657

Out[ ]= 564

Out[ ]= 2212

Out[ ]= 2397

Out[ ]= 3226

Out[ ]= 357

Out[ ]= 2115

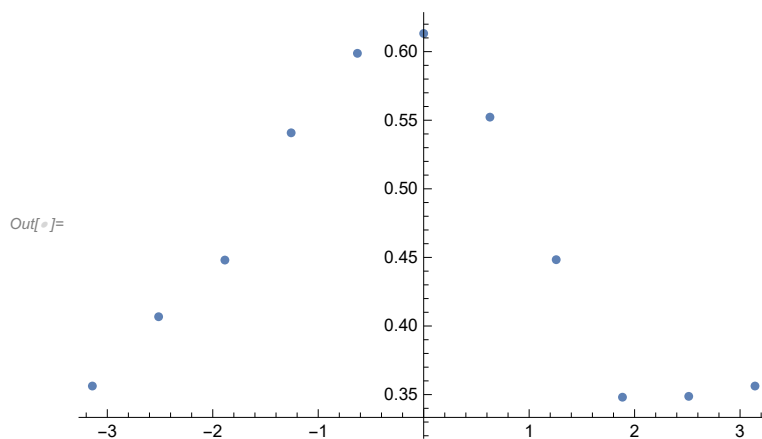
Out[ ]= 2007

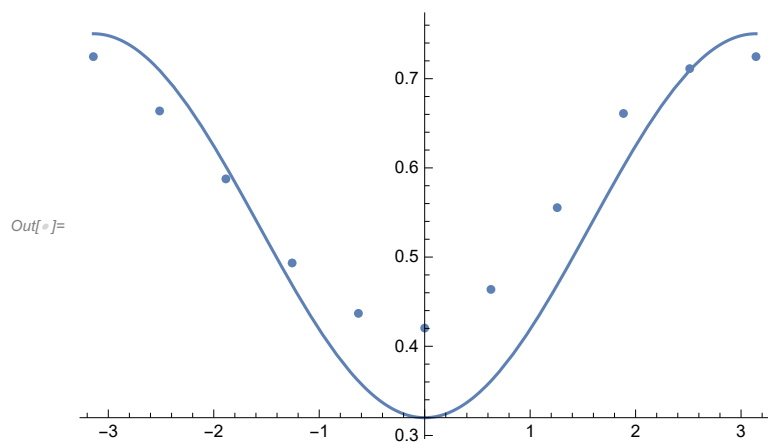
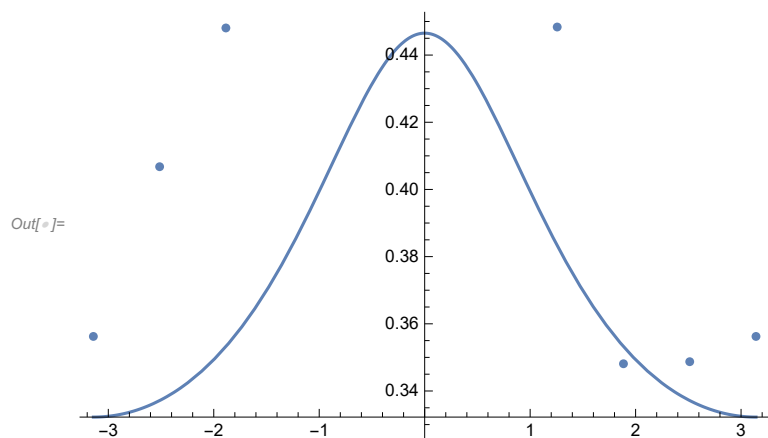
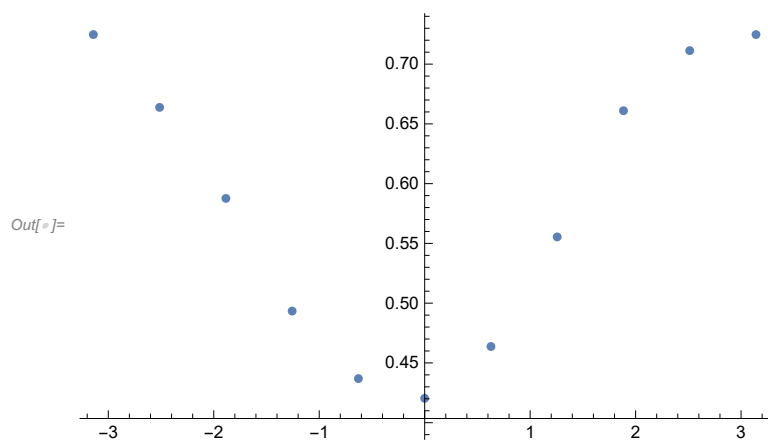
Out[ ]= 3822

Out[ ]= 248

Out[ ]=  $\left\{ \left\{ -\pi, \frac{705}{1979} \right\}, \left\{ -2.51327, \frac{1106}{2719} \right\}, \left\{ -1.88496, \frac{2157}{4814} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{1093}{2021} \right\}, \left\{ -0.628319, \frac{2143}{3579} \right\}, \left\{ 0., \frac{176}{287} \right\}, \left\{ 0.628319, \frac{2098}{3799} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{204}{455} \right\}, \left\{ 1.88496, \frac{377}{1083} \right\}, \left\{ 2.51327, \frac{2032}{5827} \right\}, \left\{ \pi, \frac{705}{1979} \right\} \right\}$

Out[ ]=  $\left\{ \left\{ -\pi, \frac{5937}{8192} \right\}, \left\{ -2.51327, \frac{2719}{4096} \right\}, \left\{ -1.88496, \frac{2407}{4096} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{2021}{4096} \right\}, \left\{ -0.628319, \frac{3579}{8192} \right\}, \left\{ 0., \frac{861}{2048} \right\}, \left\{ 0.628319, \frac{3799}{8192} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{2275}{4096} \right\}, \left\{ 1.88496, \frac{5415}{8192} \right\}, \left\{ 2.51327, \frac{5827}{8192} \right\}, \left\{ 3.14159, \frac{5937}{8192} \right\} \right\}$





Out[ ]= 2137

Out[ ]= 1765

Out[ ]= 4174

Out[ ]= 116

Out[ ]= 1988

Out[ ]= 2166



$\text{Out}[*]=$  3843

$\text{Out}[*]=$  195

$\text{Out}[*]=$  1883

$\text{Out}[*]=$  2942

$\text{Out}[*]=$  3027

$\text{Out}[*]=$  340

$\text{Out}[*]=$  1633

$\text{Out}[*]=$  4006

$\text{Out}[*]=$  2111

$\text{Out}[*]=$  442

$\text{Out}[*]=$  1468

$\text{Out}[*]=$  4693

$\text{Out}[*]=$  1418

$\text{Out}[*]=$  613

$\text{Out}[*]=$  1415

$\text{Out}[*]=$  4851

$\text{Out}[*]=$  1316

$\text{Out}[*]=$  610

$\text{Out}[*]=$  1549

$\text{Out}[*]=$  4585

$\text{Out}[*]=$  1550

$\text{Out}[*]=$  508

$\text{Out}[*]=$  1560

$\text{Out}[*]=$  3942

$\text{Out}[*]=$  2285

$\text{Out}[*]=$  405

$\text{Out}[*]=$  1804

$\text{Out}[*]=$  3003

$\text{Out}[*]=$  3146

$\text{Out}[*]=$  239

$\text{Out}[*]=$  1979

Out[ ]= 2215

Out[ ]= 3857

Out[ ]= 141

Out[ ]= 2137

Out[ ]= 1765

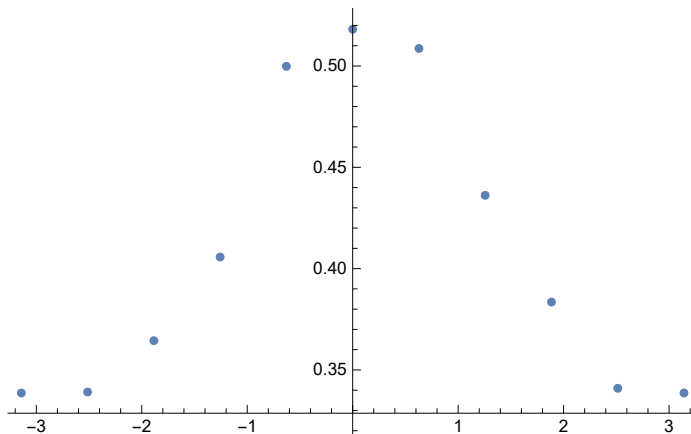
Out[ ]= 4174

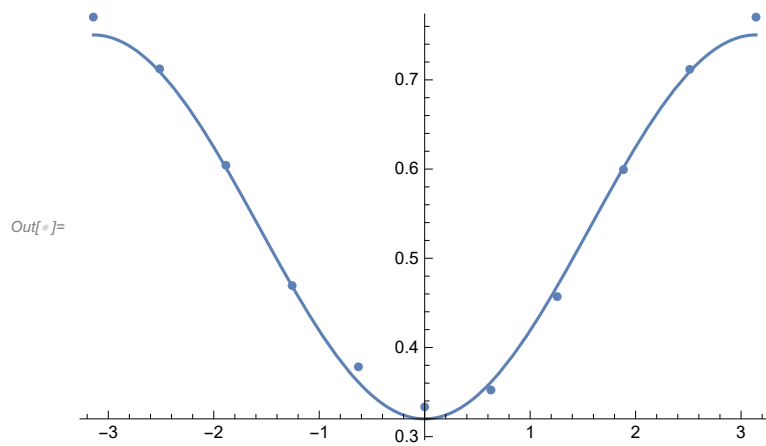
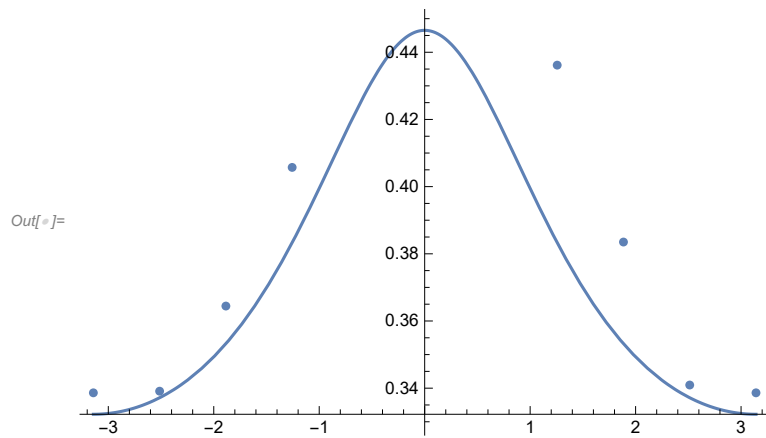
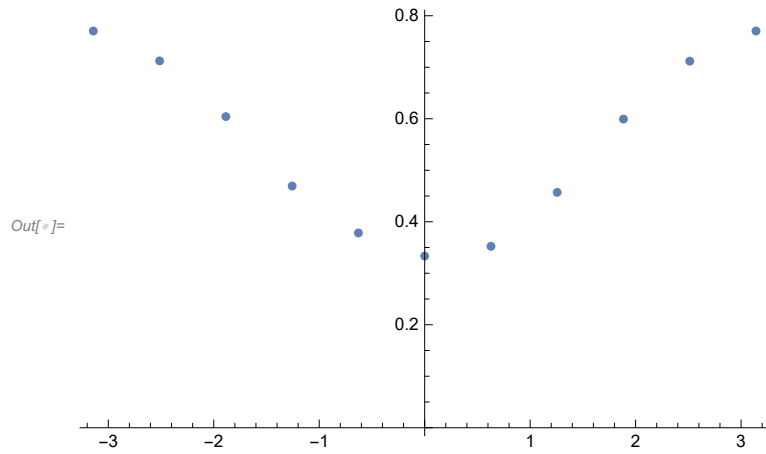
Out[ ]= 116

Out[ ]=  $\left\{ \left\{ -\pi, \frac{2137}{6311} \right\}, \left\{ -2.51327, \frac{1979}{5836} \right\}, \left\{ -1.88496, \frac{82}{225} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{312}{769} \right\}, \left\{ -0.628319, \frac{1549}{3099} \right\}, \left\{ 0., \frac{1415}{2731} \right\}, \left\{ 0.628319, \frac{734}{1443} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1633}{3744} \right\}, \left\{ 1.88496, \frac{1883}{4910} \right\}, \left\{ 2.51327, \frac{284}{833} \right\}, \left\{ \pi, \frac{2137}{6311} \right\} \right\}$

Out[ ]=  $\left\{ \left\{ -\pi, \frac{6311}{8192} \right\}, \left\{ -2.51327, \frac{1459}{2048} \right\}, \left\{ -1.88496, \frac{2475}{4096} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{3845}{8192} \right\}, \left\{ -0.628319, \frac{3099}{8192} \right\}, \left\{ 0., \frac{2731}{8192} \right\}, \left\{ 0.628319, \frac{1443}{4096} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{117}{256} \right\}, \left\{ 1.88496, \frac{2455}{4096} \right\}, \left\{ 2.51327, \frac{5831}{8192} \right\}, \left\{ 3.14159, \frac{6311}{8192} \right\} \right\}$

Out[ ]=





Out[ ]= 2093

Out[ ]= 1961

Out[ ]= 3957

Out[ ]= 181

Out[ ]= 2008

Out[ ]= 2453

Out[ ]= 3391

Out[ ]= 340

Out[ ]= 1752

Out[ ]= 3135

Out[ ]= 2831

Out[ ]= 474

Out[ ]= 1619

Out[ ]= 3875

Out[ ]= 2228

Out[ ]= 470

Out[ ]= 1595

Out[ ]= 4372

Out[ ]= 1692

Out[ ]= 533

Out[ ]= 1451

Out[ ]= 4573

Out[ ]= 1632

Out[ ]= 536

Out[ ]= 1483

Out[ ]= 4302

Out[ ]= 1851

Out[ ]= 556

Out[ ]= 1663

Out[ ]= 3464

Out[ ]= 2607

Out[ ]= 458

Out[ ]= 1858

Out[ ]= 2870

Out[ ]= 3119

Out[ ]= 345

Out[ ]= 2029

$Out[ \# ] = 2260$

$Out[ \# ] = 3719$

$Out[ \# ] = 184$

$Out[ \# ] = 2093$

$Out[ \# ] = 1961$

$Out[ \# ] = 3957$

$Out[ \# ] = 181$

$Out[ \# ] = \left\{ \left\{ -\pi, \frac{2093}{6050} \right\}, \left\{ -2.51327, \frac{2029}{5748} \right\}, \left\{ -1.88496, \frac{1858}{4977} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{1663}{4270} \right\}, \left\{ -0.628319, \frac{1483}{3334} \right\}, \left\{ 0., \frac{1451}{3083} \right\}, \left\{ 0.628319, \frac{1595}{3287} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{1619}{3847} \right\}, \left\{ 1.88496, \frac{1752}{4583} \right\}, \left\{ 2.51327, \frac{2008}{5399} \right\}, \left\{ \pi, \frac{2093}{6050} \right\} \right\}$

$Out[ \# ] = \left\{ \left\{ -\pi, \frac{3025}{4096} \right\}, \left\{ -2.51327, \frac{1437}{2048} \right\}, \left\{ -1.88496, \frac{4977}{8192} \right\}, \right.$   
 $\left. \left\{ -1.25664, \frac{2135}{4096} \right\}, \left\{ -0.628319, \frac{1667}{4096} \right\}, \left\{ 0., \frac{3083}{8192} \right\}, \left\{ 0.628319, \frac{3287}{8192} \right\}, \right.$   
 $\left. \left\{ 1.25664, \frac{3847}{8192} \right\}, \left\{ 1.88496, \frac{4583}{8192} \right\}, \left\{ 2.51327, \frac{5399}{8192} \right\}, \left\{ 3.14159, \frac{3025}{4096} \right\} \right\}$

$Out[ \# ] =$

