In[ ]:= (∗simulator_extended_stabilizer∗)
ZeroZeroFirst10simulatorextendedstabilizer = 8191
ZeroOneFirst10simulatorextendedstabilizer = 1
OneZeroFirst10simulatorextendedstabilizer = 0
OneOneFirst10simulatorextendedstabilizer = 0

ZeroZeroFirst08simulatorextendedstabilizer = 8003
ZeroOneFirst08simulatorextendedstabilizer = 3
OneZeroFirst08simulatorextendedstabilizer = 15
OneOneFirst08simulatorextendedstabilizer = 171

ZeroZeroFirst06simulatorextendedstabilizer = 7458
ZeroOneFirst06simulatorextendedstabilizer = 3
OneZeroFirst06simulatorextendedstabilizer = 71
OneOneFirst06simulatorextendedstabilizer = 660

ZeroZeroFirst04simulatorextendedstabilizer = 6560
ZeroOneFirst04simulatorextendedstabilizer = 1
OneZeroFirst04simulatorextendedstabilizer = 144
OneOneFirst04simulatorextendedstabilizer = 1487

ZeroZeroFirst02simulatorextendedstabilizer = 5301
ZeroOneFirst02simulatorextendedstabilizer = 1
OneZeroFirst02simulatorextendedstabilizer = 271
OneOneFirst02simulatorextendedstabilizer = 2619

ZeroZeroFirst00simulatorextendedstabilizer = 4010
ZeroOneFirst00simulatorextendedstabilizer = 0
OneZeroFirst00simulatorextendedstabilizer = 362
OneOneFirst00simulatorextendedstabilizer = 3820

ZeroZeroSecond02simulatorextendedstabilizer = 2831
ZeroOneSecond02simulatorextendedstabilizer = 2
OneZeroSecond02simulatorextendedstabilizer = 471
OneOneSecond02simulatorextendedstabilizer = 4888

ZeroZeroSecond04simulatorextendedstabilizer = 1683
ZeroOneSecond04simulatorextendedstabilizer = 1
OneZeroSecond04simulatorextendedstabilizer = 584
OneOneSecond04simulatorextendedstabilizer = 5924

ZeroZeroSecond06simulatorextendedstabilizer = 755
ZeroOneSecond06simulatorextendedstabilizer = 0
OneZeroSecond06simulatorextendedstabilizer = 666
OneOneSecond06simulatorextendedstabilizer = 6771

ZeroZeroSecond08simulatorextendedstabilizer = 214
ZeroOneSecond08simulatorextendedstabilizer = 0
OneZeroSecond08simulatorextendedstabilizer = 741
OneOneSecond08simulatorextendedstabilizer = 7237

```
ZeroZeroSecond10simulatorextendedstabilizer = 0
ZeroOneSecond10simulatorextendedstabilizer = 0
OneZeroSecond10simulatorextendedstabilizer = 732
OneOneSecond10simulatorextendedstabilizer = 7460
```

$$\text{CosSqsimulatorextendedstabilizer} = \Big\{\Big\{-\frac{\pi}{2} * 1, \text{ZeroZeroSecond10simulatorextendedstabilizer} /$$

$$(\text{OneZeroSecond10simulatorextendedstabilizer} +$$
$$\text{ZeroZeroSecond10simulatorextendedstabilizer})\Big\},$$

$$\Big\{-\frac{\pi}{2} * 0.8, \text{ZeroZeroSecond08simulatorextendedstabilizer} /$$
$$(\text{OneZeroSecond08simulatorextendedstabilizer} +$$
$$\text{ZeroZeroSecond08simulatorextendedstabilizer})\Big\},$$

$$\Big\{-\frac{\pi}{2} * 0.6, \text{ZeroZeroSecond06simulatorextendedstabilizer} /$$
$$(\text{OneZeroSecond06simulatorextendedstabilizer} +$$
$$\text{ZeroZeroSecond06simulatorextendedstabilizer})\Big\},$$

$$\Big\{-\frac{\pi}{2} * 0.4, \text{ZeroZeroSecond04simulatorextendedstabilizer} /$$
$$(\text{OneZeroSecond04simulatorextendedstabilizer} +$$
$$\text{ZeroZeroSecond04simulatorextendedstabilizer})\Big\},$$

$$\Big\{-\frac{\pi}{2} * 0.2, \text{ZeroZeroSecond02simulatorextendedstabilizer} /$$
$$(\text{OneZeroSecond02simulatorextendedstabilizer} +$$
$$\text{ZeroZeroSecond02simulatorextendedstabilizer})\Big\},$$

$$\Big\{\frac{\pi}{2} * 0.0, \text{ZeroZeroFirst00simulatorextendedstabilizer} /$$
$$(\text{OneZeroFirst00simulatorextendedstabilizer} +$$
$$\text{ZeroZeroFirst00simulatorextendedstabilizer})\Big\},$$

$$\Big\{\frac{\pi}{2} * 0.2, \text{ZeroZeroFirst02simulatorextendedstabilizer} /$$
$$(\text{OneZeroFirst02simulatorextendedstabilizer} +$$
$$\text{ZeroZeroFirst02simulatorextendedstabilizer})\Big\},$$

$$\Big\{\frac{\pi}{2} * 0.4, \text{ZeroZeroFirst04simulatorextendedstabilizer} /$$
$$(\text{OneZeroFirst04simulatorextendedstabilizer} +$$
$$\text{ZeroZeroFirst04simulatorextendedstabilizer})\Big\},$$

$$\Big\{\frac{\pi}{2} * 0.6, \text{ZeroZeroFirst06simulatorextendedstabilizer} /$$
$$(\text{OneZeroFirst06simulatorextendedstabilizer} +$$
$$\text{ZeroZeroFirst06simulatorextendedstabilizer})\Big\},$$

$$\Big\{\frac{\pi}{2} * 0.8, \text{ZeroZeroFirst08simulatorextendedstabilizer} /$$
$$(\text{OneZeroFirst08simulatorextendedstabilizer} +$$
$$\text{ZeroZeroFirst08simulatorextendedstabilizer})\Big\},$$

$$\Big\{\frac{\pi}{2} * 1, \text{ZeroZeroFirst10simulatorextendedstabilizer} /$$
$$(\text{OneZeroFirst10simulatorextendedstabilizer} +$$
$$\text{ZeroZeroFirst10simulatorextendedstabilizer})\Big\}\Big\}$$

```
Decisivenesssimulatorextendedstabilizer =
  {{- π/2 * 1, (OneZeroSecond10simulatorextendedstabilizer +
      ZeroZeroSecond10simulatorextendedstabilizer) / 8192},
   {- π/2 * 0.8, (OneZeroSecond08simulatorextendedstabilizer +
      ZeroZeroSecond08simulatorextendedstabilizer) / 8192},
   {- π/2 * 0.6, (OneZeroSecond06simulatorextendedstabilizer +
      ZeroZeroSecond06simulatorextendedstabilizer) / 8192},
   {- π/2 * 0.4, (OneZeroSecond04simulatorextendedstabilizer +
      ZeroZeroSecond04simulatorextendedstabilizer) / 8192},
   {- π/2 * 0.2, (OneZeroSecond02simulatorextendedstabilizer +
      ZeroZeroSecond02simulatorextendedstabilizer) / 8192},
   {- π/2 * 0.0, (OneZeroFirst00simulatorextendedstabilizer +
      ZeroZeroFirst00simulatorextendedstabilizer) / 8192},
   {π/2 * 0.2, (OneZeroFirst02simulatorextendedstabilizer +
      ZeroZeroFirst02simulatorextendedstabilizer) / 8192},
   {π/2 * 0.4, (OneZeroFirst04simulatorextendedstabilizer +
      ZeroZeroFirst04simulatorextendedstabilizer) / 8192},
   {π/2 * 0.6, (OneZeroFirst06simulatorextendedstabilizer +
      ZeroZeroFirst06simulatorextendedstabilizer) / 8192},
   {π/2 * 0.8, (OneZeroFirst08simulatorextendedstabilizer +
      ZeroZeroFirst08simulatorextendedstabilizer) / 8192},
   {π/2 * 1.0, (OneZeroFirst10simulatorextendedstabilizer +
      ZeroZeroFirst10simulatorextendedstabilizer) / 8192}}
ExpCosSqsimulatorextendedstabilizer = ListPlot[CosSqsimulatorextendedstabilizer]
ExpDecisivenesssimulatorextendedstabilizer =
  ListPlot[Decisivenesssimulatorextendedstabilizer]
```

Out[ ]= 8191

Out[ ]= 1

Out[ ]= 0

Out[ ]= 0

Out[ ]= 8003

Out[ ]= 3

Out[ ]= 15

Out[ ]= 171

Out[•]= 7458

Out[•]= 3

Out[•]= 71

Out[•]= 660

Out[•]= 6560

Out[•]= 1

Out[•]= 144

Out[•]= 1487

Out[•]= 5301

Out[•]= 1

Out[•]= 271

Out[•]= 2619

Out[•]= 4010

Out[•]= 0

Out[•]= 362

Out[•]= 3820

Out[•]= 2831

Out[•]= 2

Out[•]= 471

Out[•]= 4888

Out[•]= 1683

Out[•]= 1

Out[•]= 584

Out[•]= 5924

Out[•]= 755

Out[•]= 0

Out[•]= 666

Out[•]= 6771

Out[•]= 214

Out[•]= 0

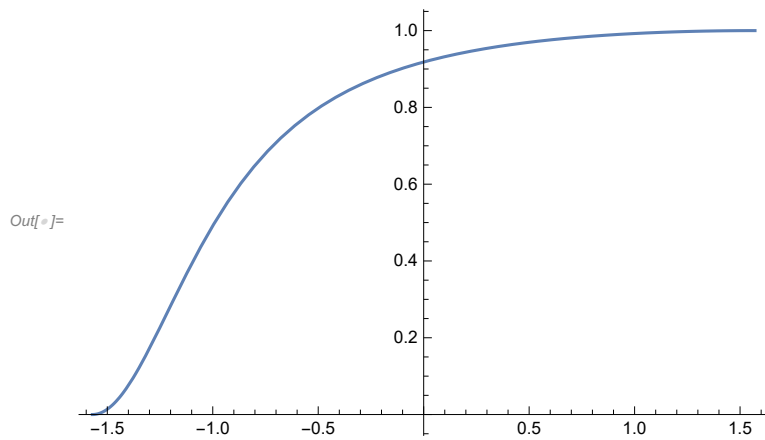Out[•]= 741

Out[●]= 7237

Out[●]= 0

Out[●]= 0

Out[●]= 732

Out[●]= 7460

Out[●]= $\left\{\left\{-\frac{\pi}{2}, 0\right\}, \left\{-1.25664, \frac{214}{955}\right\}, \left\{-0.942478, \frac{755}{1421}\right\},\right.$
$\left\{-0.628319, \frac{1683}{2267}\right\}, \left\{-0.314159, \frac{2831}{3302}\right\}, \left\{0., \frac{2005}{2186}\right\}, \left\{0.314159, \frac{5301}{5572}\right\},$
$\left\{0.628319, \frac{410}{419}\right\}, \left\{0.942478, \frac{7458}{7529}\right\}, \left\{1.25664, \frac{8003}{8018}\right\}, \left\{\frac{\pi}{2}, 1\right\}\right\}$
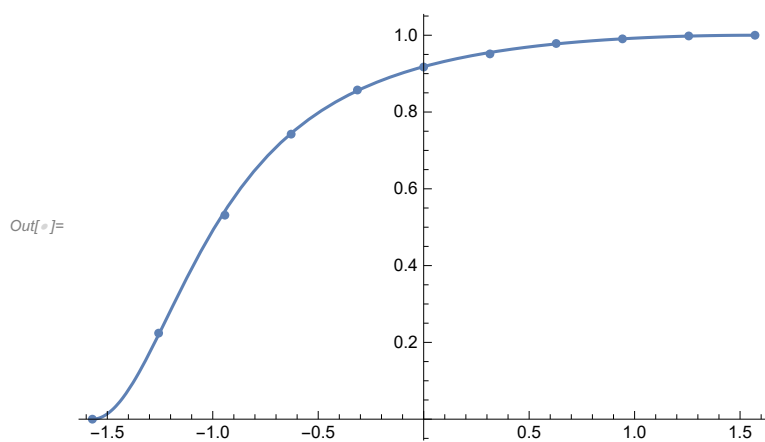
Out[●]= $\left\{\left\{-\frac{\pi}{2}, \frac{183}{2048}\right\}, \left\{-1.25664, \frac{955}{8192}\right\}, \left\{-0.942478, \frac{1421}{8192}\right\},\right.$
$\left\{-0.628319, \frac{2267}{8192}\right\}, \left\{-0.314159, \frac{1651}{4096}\right\}, \left\{0., \frac{1093}{2048}\right\}, \left\{0.314159, \frac{1393}{2048}\right\},$
$\left\{0.628319, \frac{419}{512}\right\}, \left\{0.942478, \frac{7529}{8192}\right\}, \left\{1.25664, \frac{4009}{4096}\right\}, \left\{1.5708, \frac{8191}{8192}\right\}\right\}$
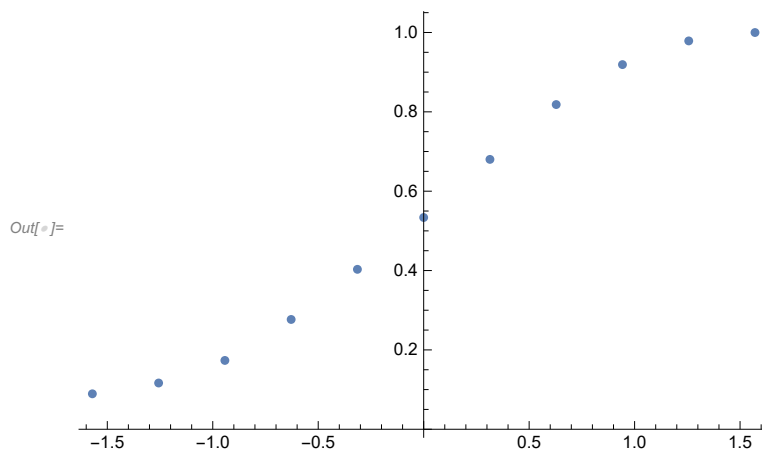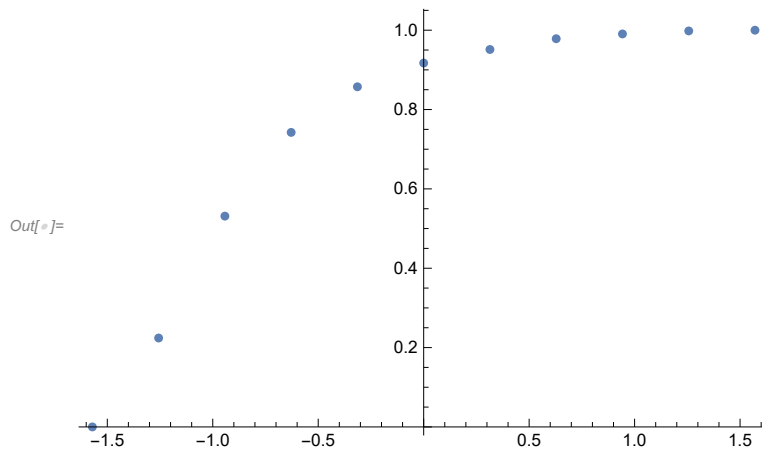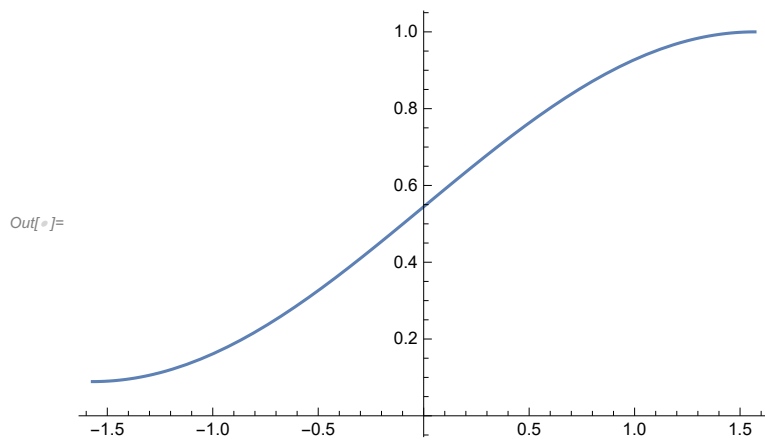
Out[●]=

Out[●]=

In[ ]:= **cosTH = Plot$\left[\text{cos13F}\left[\pi/2-1, \pi/2, x\right], \{x, -\pi/2, \pi/2\}\right]$**

Out[ ]=

In[ ]:= **Show[cosTH, ExpCosSqsimulatorextendedstabilizer]**

Out[ ]=

In[ ]:= **decTH = Plot$\left[\text{DecisiveProbability}\left[3.3506871002735, \pi/2-1, \pi/2, x\right], \{x, -\pi/2, \pi/2\}\right]$**

Out[ ]=

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

Out[ ]=
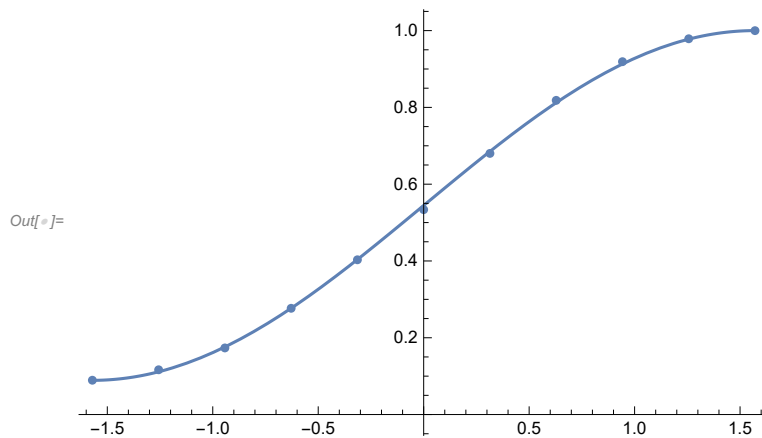
In[ ]:= **(*simulator_mps*)**
ZeroZeroFirst10simulatormps = 8192
ZeroOneFirst10simulatormps = 0
OneZeroFirst10simulatormps = 0
OneOneFirst10simulatormps = 0

ZeroZeroFirst08simulatormps = 7974
ZeroOneFirst08simulatormps = 0
OneZeroFirst08simulatormps = 20
OneOneFirst08simulatormps = 198

ZeroZeroFirst06simulatormps = 7413
ZeroOneFirst06simulatormps = 0
OneZeroFirst06simulatormps = 72
OneOneFirst06simulatormps = 707

ZeroZeroFirst04simulatormps = 6552
ZeroOneFirst04simulatormps = 0
OneZeroFirst04simulatormps = 166
OneOneFirst04simulatormps = 1474

ZeroZeroFirst02simulatormps = 5375
ZeroOneFirst02simulatormps = 0
OneZeroFirst02simulatormps = 241
OneOneFirst02simulatormps = 2576

ZeroZeroFirst00simulatormps = 4024
ZeroOneFirst00simulatormps = 0
OneZeroFirst00simulatormps = 364
OneOneFirst00simulatormps = 3804

ZeroZeroSecond02simulatormps = 2797
ZeroOneSecond02simulatormps = 0
OneZeroSecond02simulatormps = 484
OneOneSecond02simulatormps = 4911

```
ZeroZeroSecond04simulatormps = 1694
ZeroOneSecond04simulatormps = 0
OneZeroSecond04simulatormps = 616
OneOneSecond04simulatormps = 5882

ZeroZeroSecond06simulatormps = 793
ZeroOneSecond06simulatormps = 0
OneZeroSecond06simulatormps = 671
OneOneSecond06simulatormps = 6728

ZeroZeroSecond08simulatormps = 185
ZeroOneSecond08simulatormps = 0
OneZeroSecond08simulatormps = 708
OneOneSecond08simulatormps = 7299

ZeroZeroSecond10simulatormps = 0
ZeroOneSecond10simulatormps = 0
OneZeroSecond10simulatormps = 699
OneOneSecond10simulatormps = 7493
```

$$\text{CosSqsimulatormps} = \left\{ \left\{ -\frac{\pi}{2} * 1, \text{ZeroZeroSecond10simulatormps} \, / \right. \right.$$
$$\left(\text{OneZeroSecond10simulatormps} + \text{ZeroZeroSecond10simulatormps} \right) \right\},$$
$$\left\{ -\frac{\pi}{2} * 0.8, \text{ZeroZeroSecond08simulatormps} \, / \right.$$
$$\left(\text{OneZeroSecond08simulatormps} + \text{ZeroZeroSecond08simulatormps} \right) \right\},$$
$$\left\{ -\frac{\pi}{2} * 0.6, \text{ZeroZeroSecond06simulatormps} \, / \right.$$
$$\left(\text{OneZeroSecond06simulatormps} + \text{ZeroZeroSecond06simulatormps} \right) \right\},$$
$$\left\{ -\frac{\pi}{2} * 0.4, \text{ZeroZeroSecond04simulatormps} \, / \right.$$
$$\left(\text{OneZeroSecond04simulatormps} + \text{ZeroZeroSecond04simulatormps} \right) \right\},$$
$$\left\{ -\frac{\pi}{2} * 0.2, \text{ZeroZeroSecond02simulatormps} \, / \right.$$
$$\left(\text{OneZeroSecond02simulatormps} + \text{ZeroZeroSecond02simulatormps} \right) \right\},$$
$$\left\{ \frac{\pi}{2} * 0.0, \text{ZeroZeroFirst00simulatormps} \, / \left(\text{OneZeroFirst00simulatormps} + \right. \right.$$
$$\left. \text{ZeroZeroFirst00simulatormps} \right) \right\}, \left\{ \frac{\pi}{2} * 0.2, \text{ZeroZeroFirst02simulatormps} \, / \right.$$
$$\left(\text{OneZeroFirst02simulatormps} + \text{ZeroZeroFirst02simulatormps} \right) \right\},$$
$$\left\{ \frac{\pi}{2} * 0.4, \text{ZeroZeroFirst04simulatormps} \, / \left(\text{OneZeroFirst04simulatormps} + \right. \right.$$
$$\left. \text{ZeroZeroFirst04simulatormps} \right) \right\}, \left\{ \frac{\pi}{2} * 0.6, \text{ZeroZeroFirst06simulatormps} \, / \right.$$
$$\left(\text{OneZeroFirst06simulatormps} + \text{ZeroZeroFirst06simulatormps} \right) \right\},$$
$$\left\{ \frac{\pi}{2} * 0.8, \text{ZeroZeroFirst08simulatormps} \, / \left(\text{OneZeroFirst08simulatormps} + \right. \right.$$
$$\left. \text{ZeroZeroFirst08simulatormps} \right) \right\}, \left\{ \frac{\pi}{2} * 1, \text{ZeroZeroFirst10simulatormps} \, / \right.$$
$$\left. \left. \left(\text{OneZeroFirst10simulatormps} + \text{ZeroZeroFirst10simulatormps} \right) \right\} \right\}$$

```
Decisivenesssimulatormps = {{- π/2 * 1,
    (OneZeroSecond10simulatormps + ZeroZeroSecond10simulatormps) / 8192},
   {- π/2 * 0.8, (OneZeroSecond08simulatormps + ZeroZeroSecond08simulatormps) / 8192},
   {- π/2 * 0.6, (OneZeroSecond06simulatormps + ZeroZeroSecond06simulatormps) / 8192},
   {- π/2 * 0.4, (OneZeroSecond04simulatormps + ZeroZeroSecond04simulatormps) / 8192},
   {- π/2 * 0.2, (OneZeroSecond02simulatormps + ZeroZeroSecond02simulatormps) / 8192},
   {- π/2 * 0.0, (OneZeroFirst00simulatormps + ZeroZeroFirst00simulatormps) / 8192},
   {π/2 * 0.2, (OneZeroFirst02simulatormps + ZeroZeroFirst02simulatormps) / 8192},
   {π/2 * 0.4, (OneZeroFirst04simulatormps + ZeroZeroFirst04simulatormps) / 8192},
   {π/2 * 0.6, (OneZeroFirst06simulatormps + ZeroZeroFirst06simulatormps) / 8192},
   {π/2 * 0.8, (OneZeroFirst08simulatormps + ZeroZeroFirst08simulatormps) / 8192},
   {π/2 * 1.0, (OneZeroFirst10simulatormps + ZeroZeroFirst10simulatormps) / 8192}}
ExpCosSqsimulatormps = ListPlot[CosSqsimulatormps]
ExpDecisivenesssimulatormps = ListPlot[Decisivenesssimulatormps]
```

Out[●]= 8192

Out[●]= 0

Out[●]= 0

Out[●]= 0

Out[●]= 7974

Out[●]= 0

Out[●]= 20

Out[●]= 198

Out[●]= 7413

Out[●]= 0

Out[●]= 72

Out[●]= 707

Out[●]= 6552

Out[●]= 0

Out[●]= 166

Out[●]= 1474

Out[•]= 5375

Out[•]= 0

Out[•]= 241

Out[•]= 2576

Out[•]= 4024

Out[•]= 0

Out[•]= 364

Out[•]= 3804

Out[•]= 2797

Out[•]= 0

Out[•]= 484

Out[•]= 4911

Out[•]= 1694

Out[•]= 0

Out[•]= 616

Out[•]= 5882

Out[•]= 793

Out[•]= 0

Out[•]= 671

Out[•]= 6728

Out[•]= 185

Out[•]= 0

Out[•]= 708
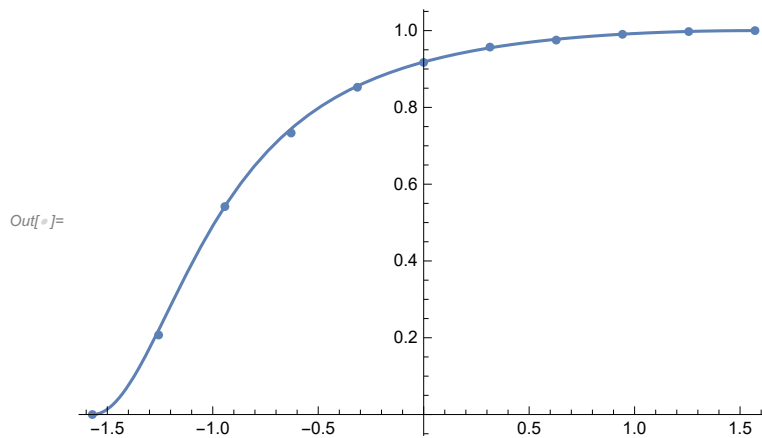
Out[•]= 7299

Out[•]= 0

Out[•]= 0

Out[•]= 699

Out[•]= 7493

Out[ ]= $\left\{\left\{-\dfrac{\pi}{2}, 0\right\}, \left\{-1.25664, \dfrac{185}{893}\right\}, \left\{-0.942478, \dfrac{13}{24}\right\},\right.$

$\left\{-0.628319, \dfrac{11}{15}\right\}, \left\{-0.314159, \dfrac{2797}{3281}\right\}, \left\{0., \dfrac{1006}{1097}\right\}, \left\{0.314159, \dfrac{5375}{5616}\right\},$

$\left\{0.628319, \dfrac{3276}{3359}\right\}, \left\{0.942478, \dfrac{2471}{2495}\right\}, \left\{1.25664, \dfrac{3987}{3997}\right\}, \left\{\dfrac{\pi}{2}, 1\right\}\right\}$

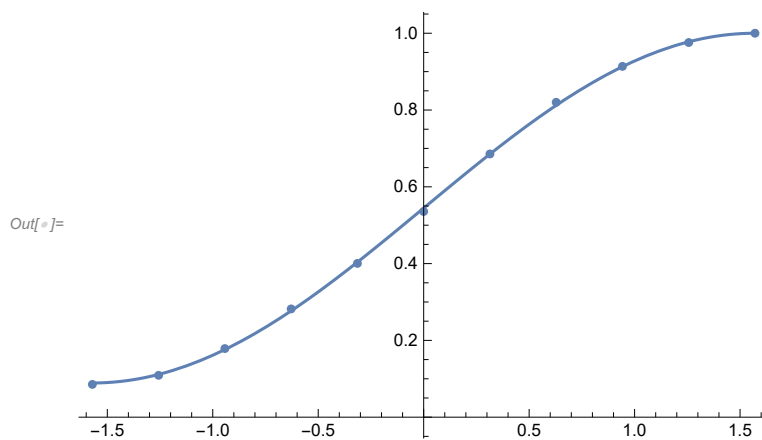Out[ ]= $\left\{\left\{-\dfrac{\pi}{2}, \dfrac{699}{8192}\right\}, \left\{-1.25664, \dfrac{893}{8192}\right\}, \left\{-0.942478, \dfrac{183}{1024}\right\},\right.$

$\left\{-0.628319, \dfrac{1155}{4096}\right\}, \left\{-0.314159, \dfrac{3281}{8192}\right\}, \left\{0., \dfrac{1097}{2048}\right\}, \left\{0.314159, \dfrac{351}{512}\right\},$

$\left\{0.628319, \dfrac{3359}{4096}\right\}, \left\{0.942478, \dfrac{7485}{8192}\right\}, \left\{1.25664, \dfrac{3997}{4096}\right\}, \{1.5708, 1\}\right\}$
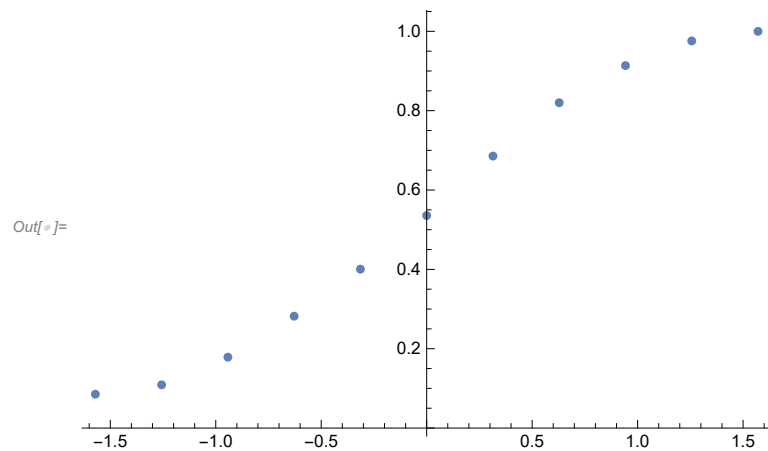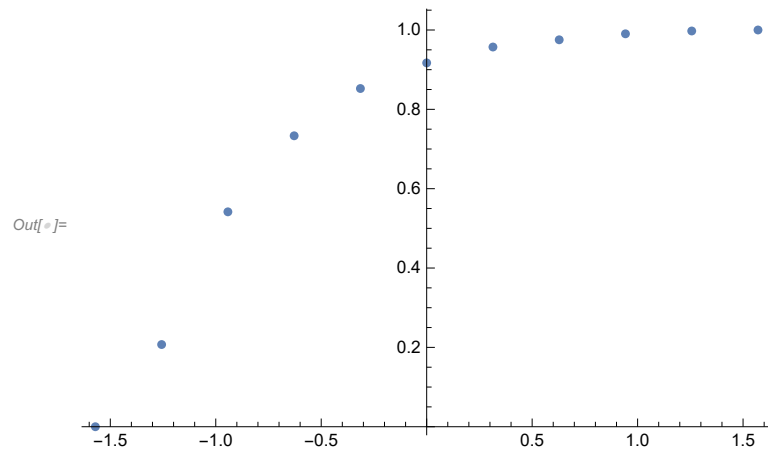
Out[ ]=

In[ ]:= **Show[cosTH, ExpCosSqsimulatormps]**

Out[ ]=

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

Out[ ]=

In[ ]:= **(*simulator_statevector*)**
ZeroZeroFirst10simulatorstatevector = 8192
ZeroOneFirst10simulatorstatevector = 0
OneZeroFirst10simulatorstatevector = 0
OneOneFirst10simulatorstatevector = 0

ZeroZeroFirst08simulatorstatevector = 7979
ZeroOneFirst08simulatorstatevector = 0
OneZeroFirst08simulatorstatevector = 21
OneOneFirst08simulatorstatevector = 192

ZeroZeroFirst06simulatorstatevector = 7420
ZeroOneFirst06simulatorstatevector = 0
OneZeroFirst06simulatorstatevector = 84
OneOneFirst06simulatorstatevector = 688

ZeroZeroFirst04simulatorstatevector = 6516
ZeroOneFirst04simulatorstatevector = 0
OneZeroFirst04simulatorstatevector = 155
OneOneFirst04simulatorstatevector = 1521

```
ZeroZeroFirst02simulatorstatevector = 5355
ZeroOneFirst02simulatorstatevector = 0
OneZeroFirst02simulatorstatevector = 254
OneOneFirst02simulatorstatevector = 2583

ZeroZeroFirst00simulatorstatevector = 4173
ZeroOneFirst00simulatorstatevector = 0
OneZeroFirst00simulatorstatevector = 339
OneOneFirst00simulatorstatevector = 3680

ZeroZeroSecond02simulatorstatevector = 2835
ZeroOneSecond02simulatorstatevector = 0
OneZeroSecond02simulatorstatevector = 465
OneOneSecond02simulatorstatevector = 4892

ZeroZeroSecond04simulatorstatevector = 1668
ZeroOneSecond04simulatorstatevector = 0
OneZeroSecond04simulatorstatevector = 576
OneOneSecond04simulatorstatevector = 5948

ZeroZeroSecond06simulatorstatevector = 790
ZeroOneSecond06simulatorstatevector = 0
OneZeroSecond06simulatorstatevector = 690
OneOneSecond06simulatorstatevector = 6712

ZeroZeroSecond08simulatorstatevector = 195
ZeroOneSecond08simulatorstatevector = 0
OneZeroSecond08simulatorstatevector = 684
OneOneSecond08simulatorstatevector = 7313

ZeroZeroSecond10simulatorstatevector = 0
ZeroOneSecond10simulatorstatevector = 0
OneZeroSecond10simulatorstatevector = 778
OneOneSecond10simulatorstatevector = 7414
```

$$\text{CosSqsimulatorstatevector} = \{\{-\frac{\pi}{2} * 1, \text{ZeroZeroSecond10simulatorstatevector} /$$
$$(\text{OneZeroSecond10simulatorstatevector} + \text{ZeroZeroSecond10simulatorstatevector})\},$$
$$\{-\frac{\pi}{2} * 0.8, \text{ZeroZeroSecond08simulatorstatevector} /$$
$$(\text{OneZeroSecond08simulatorstatevector} + \text{ZeroZeroSecond08simulatorstatevector})\},$$
$$\{-\frac{\pi}{2} * 0.6, \text{ZeroZeroSecond06simulatorstatevector} /$$
$$(\text{OneZeroSecond06simulatorstatevector} + \text{ZeroZeroSecond06simulatorstatevector})\},$$
$$\{-\frac{\pi}{2} * 0.4, \text{ZeroZeroSecond04simulatorstatevector} /$$
$$(\text{OneZeroSecond04simulatorstatevector} + \text{ZeroZeroSecond04simulatorstatevector})\},$$
$$\{-\frac{\pi}{2} * 0.2, \text{ZeroZeroSecond02simulatorstatevector} /$$
$$(\text{OneZeroSecond02simulatorstatevector} + \text{ZeroZeroSecond02simulatorstatevector})\},$$

$\{\frac{\pi}{2} * 0.0,$ ZeroZeroFirst00simulatorstatevector /

  (OneZeroFirst00simulatorstatevector + ZeroZeroFirst00simulatorstatevector)$\}$,

$\{\frac{\pi}{2} * 0.2,$ ZeroZeroFirst02simulatorstatevector /

  (OneZeroFirst02simulatorstatevector + ZeroZeroFirst02simulatorstatevector)$\}$,

$\{\frac{\pi}{2} * 0.4,$ ZeroZeroFirst04simulatorstatevector /

  (OneZeroFirst04simulatorstatevector + ZeroZeroFirst04simulatorstatevector)$\}$,

$\{\frac{\pi}{2} * 0.6,$ ZeroZeroFirst06simulatorstatevector /

  (OneZeroFirst06simulatorstatevector + ZeroZeroFirst06simulatorstatevector)$\}$,

$\{\frac{\pi}{2} * 0.8,$ ZeroZeroFirst08simulatorstatevector /

  (OneZeroFirst08simulatorstatevector + ZeroZeroFirst08simulatorstatevector)$\}$,

$\{\frac{\pi}{2} * 1,$ ZeroZeroFirst10simulatorstatevector /

  (OneZeroFirst10simulatorstatevector + ZeroZeroFirst10simulatorstatevector)$\}\}$

Decisivenesssimulatorstatevector = $\{\{-\frac{\pi}{2} * 1,$

  (OneZeroSecond10simulatorstatevector + ZeroZeroSecond10simulatorstatevector) / 8192$\}$,

  $\{-\frac{\pi}{2} * 0.8,$ (OneZeroSecond08simulatorstatevector + ZeroZeroSecond08simulatorstatevector) /

    8192$\}$, $\{-\frac{\pi}{2} * 0.6,$

  (OneZeroSecond06simulatorstatevector + ZeroZeroSecond06simulatorstatevector) / 8192$\}$,

  $\{-\frac{\pi}{2} * 0.4,$ (OneZeroSecond04simulatorstatevector + ZeroZeroSecond04simulatorstatevector) /

    8192$\}$, $\{-\frac{\pi}{2} * 0.2,$

  (OneZeroSecond02simulatorstatevector + ZeroZeroSecond02simulatorstatevector) / 8192$\}$,

  $\{-\frac{\pi}{2} * 0.0,$ (OneZeroFirst00simulatorstatevector + ZeroZeroFirst00simulatorstatevector) /

    8192$\}$, $\{\frac{\pi}{2} * 0.2,$

  (OneZeroFirst02simulatorstatevector + ZeroZeroFirst02simulatorstatevector) / 8192$\}$,

  $\{\frac{\pi}{2} * 0.4,$ (OneZeroFirst04simulatorstatevector + ZeroZeroFirst04simulatorstatevector) /

    8192$\}$, $\{\frac{\pi}{2} * 0.6,$

  (OneZeroFirst06simulatorstatevector + ZeroZeroFirst06simulatorstatevector) / 8192$\}$,

  $\{\frac{\pi}{2} * 0.8,$ (OneZeroFirst08simulatorstatevector + ZeroZeroFirst08simulatorstatevector) /

    8192$\}$, $\{\frac{\pi}{2} * 1.0,$

  (OneZeroFirst10simulatorstatevector + ZeroZeroFirst10simulatorstatevector) / 8192$\}\}$

ExpCosSqsimulatorstatevector = ListPlot[CosSqsimulatorstatevector]
ExpDecisivenesssimulatorstatevector = ListPlot[Decisivenesssimulatorstatevector]

Out[•]= 8192

Out[ ]= 0

Out[ ]= 0

Out[ ]= 0

Out[ ]= 7979

Out[ ]= 0

Out[ ]= 21

Out[ ]= 192

Out[ ]= 7420

Out[ ]= 0

Out[ ]= 84

Out[ ]= 688

Out[ ]= 6516

Out[ ]= 0

Out[ ]= 155

Out[ ]= 1521

Out[ ]= 5355

Out[ ]= 0

Out[ ]= 254

Out[ ]= 2583

Out[ ]= 4173

Out[ ]= 0

Out[ ]= 339

Out[ ]= 3680

Out[ ]= 2835

Out[ ]= 0

Out[ ]= 465

Out[ ]= 4892

Out[ ]= 1668

Out[ ]= 0

Out[ ]= 576

Out[ ]= 5948

Out[ ]= 790

Out[ ]= 0

Out[ ]= 690

Out[ ]= 6712

Out[ ]= 195

Out[ ]= 0

Out[ ]= 684
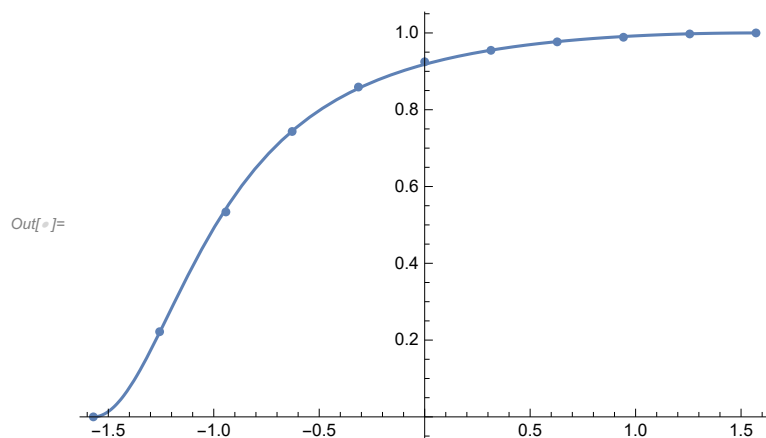
Out[ ]= 7313

Out[ ]= 0

Out[ ]= 0

Out[ ]= 778

Out[ ]= 7414

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, 0\right\}, \left\{-1.25664, \frac{65}{293}\right\}, \left\{-0.942478, \frac{79}{148}\right\}, \right.$
$\left\{-0.628319, \frac{139}{187}\right\}, \left\{-0.314159, \frac{189}{220}\right\}, \left\{0., \frac{1391}{1504}\right\}, \left\{0.314159, \frac{5355}{5609}\right\}, $
$\left.\left\{0.628319, \frac{6516}{6671}\right\}, \left\{0.942478, \frac{265}{268}\right\}, \left\{1.25664, \frac{7979}{8000}\right\}, \left\{\frac{\pi}{2}, 1\right\}\right\}$

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, \frac{389}{4096}\right\}, \left\{-1.25664, \frac{879}{8192}\right\}, \left\{-0.942478, \frac{185}{1024}\right\}, \right.$
$\left\{-0.628319, \frac{561}{2048}\right\}, \left\{-0.314159, \frac{825}{2048}\right\}, \left\{0., \frac{141}{256}\right\}, \left\{0.314159, \frac{5609}{8192}\right\}, $
$\left.\left\{0.628319, \frac{6671}{8192}\right\}, \left\{0.942478, \frac{469}{512}\right\}, \left\{1.25664, \frac{125}{128}\right\}, \{1.5708, 1\}\right\}$
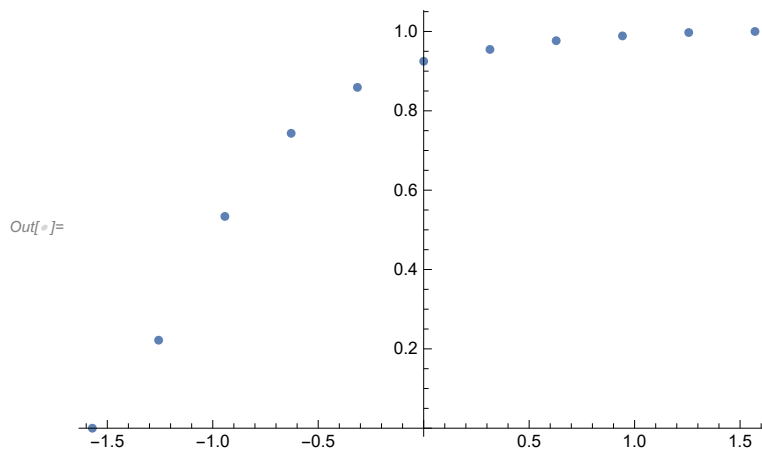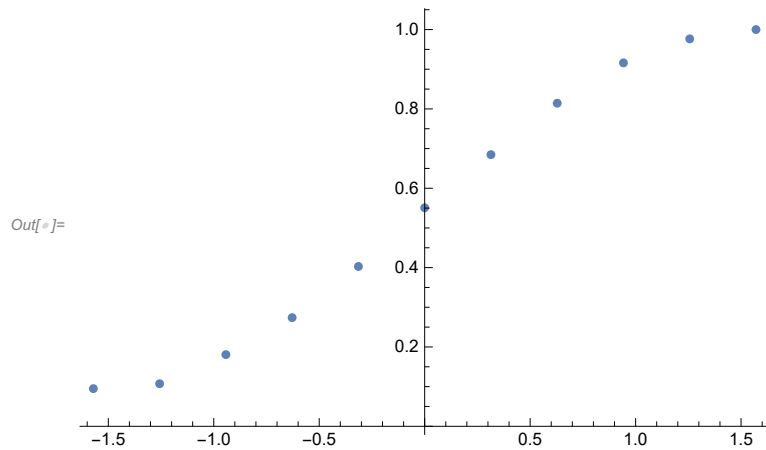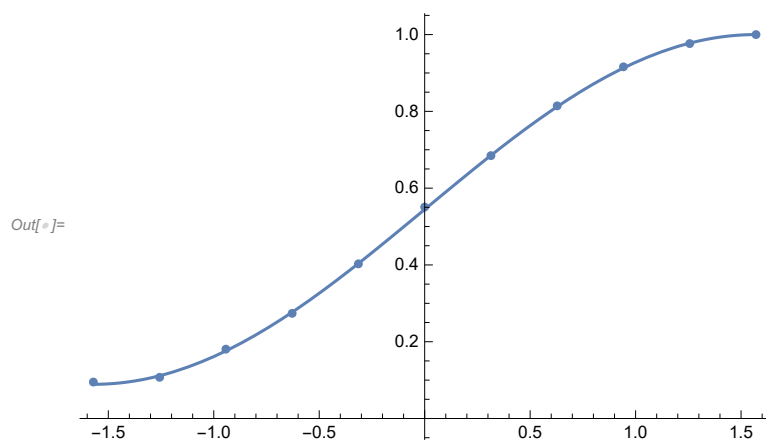
Out[ ]=

Out[ ]=

In[ ]:= **Show[cosTH, ExpCosSqsimulatorstatevector]**

Out[ ]=

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

Out[ ]=

In[ ]:= **(*ibm_nairobi*)**
ZeroZeroFirst10ibmnairobi = 7654
ZeroOneFirst10ibmnairobi = 173
OneZeroFirst10ibmnairobi = 80
OneOneFirst10ibmnairobi = 285

ZeroZeroFirst08ibmnairobi = 7055

```
ZeroOneFirst08ibmnairobi = 171
OneZeroFirst08ibmnairobi = 132
OneOneFirst08ibmnairobi = 834

ZeroZeroFirst06ibmnairobi = 6257
ZeroOneFirst06ibmnairobi = 200
OneZeroFirst06ibmnairobi = 203
OneOneFirst06ibmnairobi = 1532

ZeroZeroFirst04ibmnairobi = 5222
ZeroOneFirst04ibmnairobi = 224
OneZeroFirst04ibmnairobi = 313
OneOneFirst04ibmnairobi = 2433

ZeroZeroFirst02ibmnairobi = 3907
ZeroOneFirst02ibmnairobi = 252
OneZeroFirst02ibmnairobi = 439
OneOneFirst02ibmnairobi = 3594

ZeroZeroFirst00ibmnairobi = 2675
ZeroOneFirst00ibmnairobi = 242
OneZeroFirst00ibmnairobi = 587
OneOneFirst00ibmnairobi = 4688

ZeroZeroSecond02ibmnairobi = 1758
ZeroOneSecond02ibmnairobi = 268
OneZeroSecond02ibmnairobi = 677
OneOneSecond02ibmnairobi = 5489

ZeroZeroSecond04ibmnairobi = 817
ZeroOneSecond04ibmnairobi = 297
OneZeroSecond04ibmnairobi = 723
OneOneSecond04ibmnairobi = 6355

ZeroZeroSecond06ibmnairobi = 289
ZeroOneSecond06ibmnairobi = 302
OneZeroSecond06ibmnairobi = 766
OneOneSecond06ibmnairobi = 6835

ZeroZeroSecond08ibmnairobi = 147
ZeroOneSecond08ibmnairobi = 283
OneZeroSecond08ibmnairobi = 765
OneOneSecond08ibmnairobi = 6997

ZeroZeroSecond10ibmnairobi = 284
ZeroOneSecond10ibmnairobi = 283
OneZeroSecond10ibmnairobi = 838
OneOneSecond10ibmnairobi = 6787
```

$$\text{CosSqibmnairobi} = \left\{\left\{-\frac{\pi}{2} * 1,\right.\right.$$

```
    ZeroZeroSecond10ibmnairobi / (OneZeroSecond10ibmnairobi + ZeroZeroSecond10ibmnairobi) },
  { - π/2 * 0.8, ZeroZeroSecond08ibmnairobi /

    (OneZeroSecond08ibmnairobi + ZeroZeroSecond08ibmnairobi) }, { - π/2 * 0.6,

   ZeroZeroSecond06ibmnairobi / (OneZeroSecond06ibmnairobi + ZeroZeroSecond06ibmnairobi) },
  { - π/2 * 0.4, ZeroZeroSecond04ibmnairobi /

    (OneZeroSecond04ibmnairobi + ZeroZeroSecond04ibmnairobi) }, { - π/2 * 0.2,

   ZeroZeroSecond02ibmnairobi / (OneZeroSecond02ibmnairobi + ZeroZeroSecond02ibmnairobi) },
  { π/2 * 0.0, ZeroZeroFirst00ibmnairobi /

    (OneZeroFirst00ibmnairobi + ZeroZeroFirst00ibmnairobi) }, { π/2 * 0.2,

   ZeroZeroFirst02ibmnairobi / (OneZeroFirst02ibmnairobi + ZeroZeroFirst02ibmnairobi) },
  { π/2 * 0.4, ZeroZeroFirst04ibmnairobi /

    (OneZeroFirst04ibmnairobi + ZeroZeroFirst04ibmnairobi) }, { π/2 * 0.6,

   ZeroZeroFirst06ibmnairobi / (OneZeroFirst06ibmnairobi + ZeroZeroFirst06ibmnairobi) },
  { π/2 * 0.8, ZeroZeroFirst08ibmnairobi /

    (OneZeroFirst08ibmnairobi + ZeroZeroFirst08ibmnairobi) }, { π/2 * 1,

   ZeroZeroFirst10ibmnairobi / (OneZeroFirst10ibmnairobi + ZeroZeroFirst10ibmnairobi) }}
Decisivenessibmnairobi = {{ - π/2 * 1,

   (OneZeroSecond10ibmnairobi + ZeroZeroSecond10ibmnairobi) / 8192 },
  { - π/2 * 0.8, (OneZeroSecond08ibmnairobi + ZeroZeroSecond08ibmnairobi) / 8192 },
  { - π/2 * 0.6, (OneZeroSecond06ibmnairobi + ZeroZeroSecond06ibmnairobi) / 8192 },
  { - π/2 * 0.4, (OneZeroSecond04ibmnairobi + ZeroZeroSecond04ibmnairobi) / 8192 },
  { - π/2 * 0.2, (OneZeroSecond02ibmnairobi + ZeroZeroSecond02ibmnairobi) / 8192 },
  { - π/2 * 0.0, (OneZeroFirst00ibmnairobi + ZeroZeroFirst00ibmnairobi) / 8192 },
  { π/2 * 0.2, (OneZeroFirst02ibmnairobi + ZeroZeroFirst02ibmnairobi) / 8192 },
  { π/2 * 0.4, (OneZeroFirst04ibmnairobi + ZeroZeroFirst04ibmnairobi) / 8192 },
  { π/2 * 0.6, (OneZeroFirst06ibmnairobi + ZeroZeroFirst06ibmnairobi) / 8192 },
  { π/2 * 0.8, (OneZeroFirst08ibmnairobi + ZeroZeroFirst08ibmnairobi) / 8192 },
  { π/2 * 1.0, (OneZeroFirst10ibmnairobi + ZeroZeroFirst10ibmnairobi) / 8192 }}
ExpCosSqibmnairobi = ListPlot[CosSqibmnairobi]
ExpDecisivenessibmnairobi = ListPlot[Decisivenessibmnairobi]
```

Out[●]= 7654

Out[●]= 173

Out[●]= 80

Out[●]= 285

Out[●]= 7055

Out[●]= 171

Out[●]= 132

Out[●]= 834

Out[●]= 6257

Out[●]= 200

Out[●]= 203

Out[●]= 1532

Out[●]= 5222

Out[●]= 224

Out[●]= 313

Out[●]= 2433

Out[●]= 3907

Out[●]= 252

Out[●]= 439

Out[●]= 3594

Out[●]= 2675

Out[●]= 242

Out[●]= 587

Out[●]= 4688

Out[●]= 1758

Out[●]= 268

Out[●]= 677

Out[●]= 5489

Out[●]= 817

Out[●]= 297

Out[●]= 723

Out[ ]= 6355

Out[ ]= 289

Out[ ]= 302

Out[ ]= 766

Out[ ]= 6835

Out[ ]= 147

Out[ ]= 283

Out[ ]= 765

Out[ ]= 6997
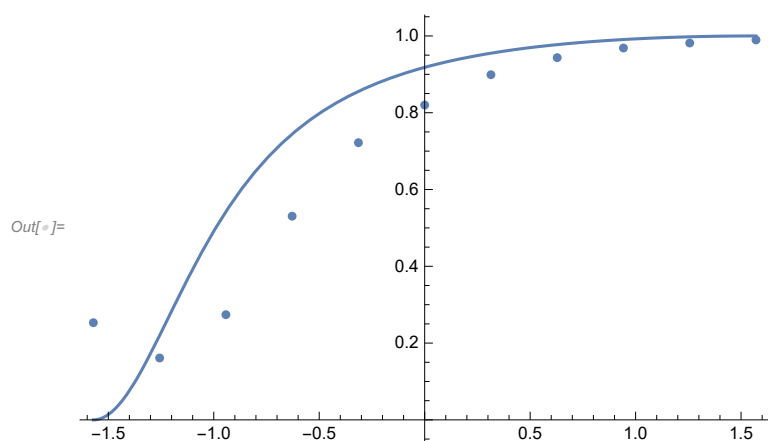
Out[ ]= 284

Out[ ]= 283

Out[ ]= 838

Out[ ]= 6787

Out[ ]= $\left\{\left\{-\dfrac{\pi}{2}, \dfrac{142}{561}\right\}, \left\{-1.25664, \dfrac{49}{304}\right\}, \left\{-0.942478, \dfrac{289}{1055}\right\},\right.$
$\left\{-0.628319, \dfrac{817}{1540}\right\}, \left\{-0.314159, \dfrac{1758}{2435}\right\}, \left\{0., \dfrac{2675}{3262}\right\}, \left\{0.314159, \dfrac{3907}{4346}\right\},$
$\left\{0.628319, \dfrac{5222}{5535}\right\}, \left\{0.942478, \dfrac{6257}{6460}\right\}, \left\{1.25664, \dfrac{7055}{7187}\right\}, \left\{\dfrac{\pi}{2}, \dfrac{3827}{3867}\right\}\right\}$

Out[ ]= $\left\{\left\{-\dfrac{\pi}{2}, \dfrac{561}{4096}\right\}, \left\{-1.25664, \dfrac{57}{512}\right\}, \left\{-0.942478, \dfrac{1055}{8192}\right\},\right.$
$\left\{-0.628319, \dfrac{385}{2048}\right\}, \left\{-0.314159, \dfrac{2435}{8192}\right\}, \left\{0., \dfrac{1631}{4096}\right\}, \left\{0.314159, \dfrac{2173}{4096}\right\},$
$\left\{0.628319, \dfrac{5535}{8192}\right\}, \left\{0.942478, \dfrac{1615}{2048}\right\}, \left\{1.25664, \dfrac{7187}{8192}\right\}, \left\{1.5708, \dfrac{3867}{4096}\right\}\right\}$
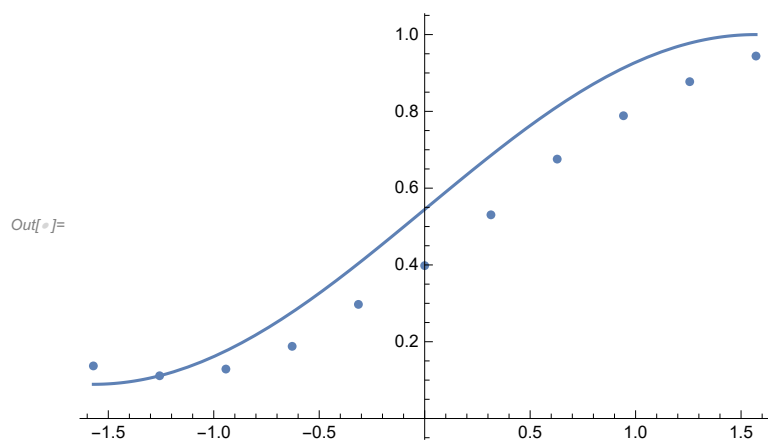
Out[ ]=

Out[ ]=
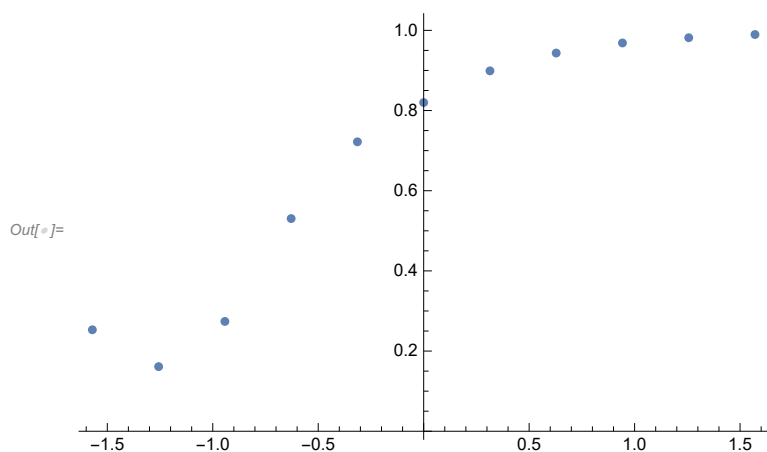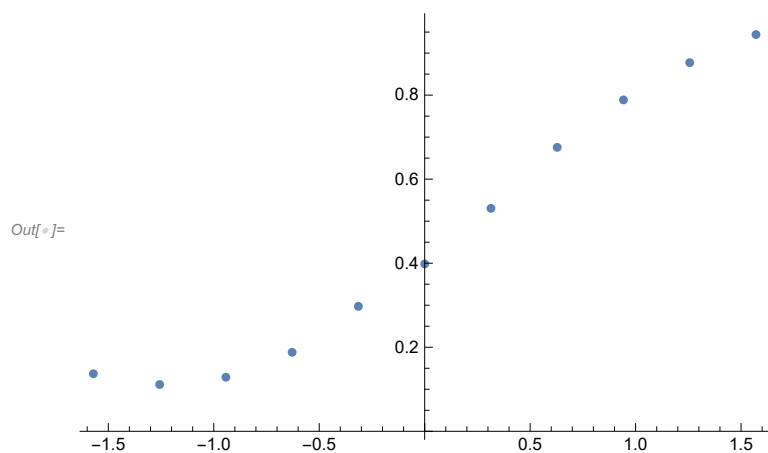
In[ ]:= **Show[cosTH, ExpCosSqibmnairobi]**

Out[ ]=

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

Out[ ]=

In[ ]:= **(*ibm_oslo*)**
ZeroZeroFirst10ibmoslo = 7106
ZeroOneFirst10ibmoslo = 741
OneZeroFirst10ibmoslo = 181
OneOneFirst10ibmoslo = 164

ZeroZeroFirst08ibmoslo = 7037

```
ZeroOneFirst08ibmoslo = 700
OneZeroFirst08ibmoslo = 157
OneOneFirst08ibmoslo = 298

ZeroZeroFirst06ibmoslo = 6576
ZeroOneFirst06ibmoslo = 710
OneZeroFirst06ibmoslo = 190
OneOneFirst06ibmoslo = 716

ZeroZeroFirst04ibmoslo = 5877
ZeroOneFirst04ibmoslo = 580
OneZeroFirst04ibmoslo = 275
OneOneFirst04ibmoslo = 1460

ZeroZeroFirst02ibmoslo = 5032
ZeroOneFirst02ibmoslo = 526
OneZeroFirst02ibmoslo = 408
OneOneFirst02ibmoslo = 2226

ZeroZeroFirst00ibmoslo = 3960
ZeroOneFirst00ibmoslo = 405
OneZeroFirst00ibmoslo = 498
OneOneFirst00ibmoslo = 3329

ZeroZeroSecond02ibmoslo = 2705
ZeroOneSecond02ibmoslo = 410
OneZeroSecond02ibmoslo = 631
OneOneSecond02ibmoslo = 4446

ZeroZeroSecond04ibmoslo = 1786
ZeroOneSecond04ibmoslo = 263
OneZeroSecond04ibmoslo = 712
OneOneSecond04ibmoslo = 5431

ZeroZeroSecond06ibmoslo = 948
ZeroOneSecond06ibmoslo = 185
OneZeroSecond06ibmoslo = 818
OneOneSecond06ibmoslo = 6241

ZeroZeroSecond08ibmoslo = 427
ZeroOneSecond08ibmoslo = 155
OneZeroSecond08ibmoslo = 877
OneOneSecond08ibmoslo = 6733

ZeroZeroSecond10ibmoslo = 188
ZeroOneSecond10ibmoslo = 216
OneZeroSecond10ibmoslo = 977
OneOneSecond10ibmoslo = 6811

CosSqibmoslo =
```

$$\left\{\left\{-\frac{\pi}{2} * 1, \text{ZeroZeroSecond10ibmoslo} / (\text{OneZeroSecond10ibmoslo} + \text{ZeroZeroSecond10ibmoslo})\right\},\right.$$

$$\left\{-\frac{\pi}{2} * 0.8, \text{ZeroZeroSecond08ibmoslo} / (\text{OneZeroSecond08ibmoslo} + \text{ZeroZeroSecond08ibmoslo})\right\},$$

$$\left\{-\frac{\pi}{2} * 0.6, \text{ZeroZeroSecond06ibmoslo} / (\text{OneZeroSecond06ibmoslo} + \text{ZeroZeroSecond06ibmoslo})\right\},$$

$$\left\{-\frac{\pi}{2} * 0.4, \text{ZeroZeroSecond04ibmoslo} / (\text{OneZeroSecond04ibmoslo} + \text{ZeroZeroSecond04ibmoslo})\right\},$$

$$\left\{-\frac{\pi}{2} * 0.2, \text{ZeroZeroSecond02ibmoslo} / (\text{OneZeroSecond02ibmoslo} + \text{ZeroZeroSecond02ibmoslo})\right\},$$

$$\left\{\frac{\pi}{2} * 0.0, \text{ZeroZeroFirst00ibmoslo} / (\text{OneZeroFirst00ibmoslo} + \text{ZeroZeroFirst00ibmoslo})\right\},$$

$$\left\{\frac{\pi}{2} * 0.2, \text{ZeroZeroFirst02ibmoslo} / (\text{OneZeroFirst02ibmoslo} + \text{ZeroZeroFirst02ibmoslo})\right\},$$

$$\left\{\frac{\pi}{2} * 0.4, \text{ZeroZeroFirst04ibmoslo} / (\text{OneZeroFirst04ibmoslo} + \text{ZeroZeroFirst04ibmoslo})\right\},$$

$$\left\{\frac{\pi}{2} * 0.6, \text{ZeroZeroFirst06ibmoslo} / (\text{OneZeroFirst06ibmoslo} + \text{ZeroZeroFirst06ibmoslo})\right\},$$

$$\left\{\frac{\pi}{2} * 0.8, \text{ZeroZeroFirst08ibmoslo} / (\text{OneZeroFirst08ibmoslo} + \text{ZeroZeroFirst08ibmoslo})\right\},$$

$$\left\{\frac{\pi}{2} * 1, \text{ZeroZeroFirst10ibmoslo} / (\text{OneZeroFirst10ibmoslo} + \text{ZeroZeroFirst10ibmoslo})\right\}\right\}$$

$$\text{Decisivenessibmoslo} = \left\{\left\{-\frac{\pi}{2} * 1, (\text{OneZeroSecond10ibmoslo} + \text{ZeroZeroSecond10ibmoslo}) / 8192\right\},\right.$$

$$\left\{-\frac{\pi}{2} * 0.8, (\text{OneZeroSecond08ibmoslo} + \text{ZeroZeroSecond08ibmoslo}) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.6, (\text{OneZeroSecond06ibmoslo} + \text{ZeroZeroSecond06ibmoslo}) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.4, (\text{OneZeroSecond04ibmoslo} + \text{ZeroZeroSecond04ibmoslo}) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.2, (\text{OneZeroSecond02ibmoslo} + \text{ZeroZeroSecond02ibmoslo}) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.0, (\text{OneZeroFirst00ibmoslo} + \text{ZeroZeroFirst00ibmoslo}) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.2, (\text{OneZeroFirst02ibmoslo} + \text{ZeroZeroFirst02ibmoslo}) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.4, (\text{OneZeroFirst04ibmoslo} + \text{ZeroZeroFirst04ibmoslo}) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.6, (\text{OneZeroFirst06ibmoslo} + \text{ZeroZeroFirst06ibmoslo}) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.8, (\text{OneZeroFirst08ibmoslo} + \text{ZeroZeroFirst08ibmoslo}) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 1.0, (\text{OneZeroFirst10ibmoslo} + \text{ZeroZeroFirst10ibmoslo}) / 8192\right\}\right\}$$

```
ExpCosSqibmoslo = ListPlot[CosSqibmoslo]
ExpDecisivenessibmoslo = ListPlot[Decisivenessibmoslo]
```

Out[ ]= 7106

Out[ ]= 741

Out[ ]= 181

Out[ ]= 164

Out[ ]= 7037

Out[ ]= 700

Out[ ]= 157

Out[ ]= 298

Out[ ]= 6576

Out[ ]= 710

Out[ ]= 190

Out[ ]= 716

Out[ ]= 5877

Out[ ]= 580

Out[ ]= 275

Out[ ]= 1460

Out[ ]= 5032

Out[ ]= 526

Out[ ]= 408

Out[ ]= 2226

Out[ ]= 3960

Out[ ]= 405

Out[ ]= 498

Out[ ]= 3329

Out[ ]= 2705

Out[ ]= 410

Out[ ]= 631

Out[ ]= 4446

Out[ ]= 1786

Out[ ]= 263

Out[ ]= 712

Out[ ]= 5431

Out[ ]= 948

Out[ ]= 185

Out[ ]= 818

Out[ ]= 6241

Out[ ]= 427

Out[ ]= 155

Out[ ]= 877

Out[ ]= 6733

Out[ ]= 188

Out[ ]= 216

Out[ ]= 977

Out[ ]= 6811

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, \frac{188}{1165}\right\}, \left\{-1.25664, \frac{427}{1304}\right\}, \left\{-0.942478, \frac{474}{883}\right\}, \right.$
$\left\{-0.628319, \frac{893}{1249}\right\}, \left\{-0.314159, \frac{2705}{3336}\right\}, \left\{0., \frac{660}{743}\right\}, \left\{0.314159, \frac{37}{40}\right\}, $
$\left\{0.628319, \frac{5877}{6152}\right\}, \left\{0.942478, \frac{3288}{3383}\right\}, \left\{1.25664, \frac{7037}{7194}\right\}, \left\{\frac{\pi}{2}, \frac{7106}{7287}\right\}\right\}$

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, \frac{1165}{8192}\right\}, \left\{-1.25664, \frac{163}{1024}\right\}, \left\{-0.942478, \frac{883}{4096}\right\}, \right.$
$\left\{-0.628319, \frac{1249}{4096}\right\}, \left\{-0.314159, \frac{417}{1024}\right\}, \left\{0., \frac{2229}{4096}\right\}, \left\{0.314159, \frac{85}{128}\right\}, $
$\left\{0.628319, \frac{769}{1024}\right\}, \left\{0.942478, \frac{3383}{4096}\right\}, \left\{1.25664, \frac{3597}{4096}\right\}, \left\{1.5708, \frac{7287}{8192}\right\}\right\}$
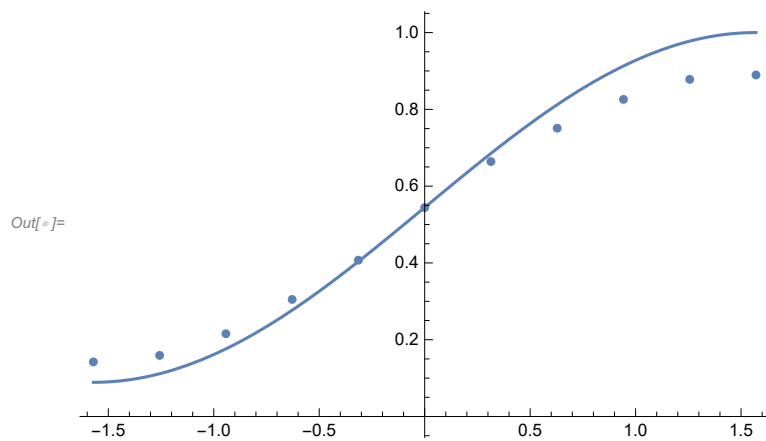
Out[ ]=
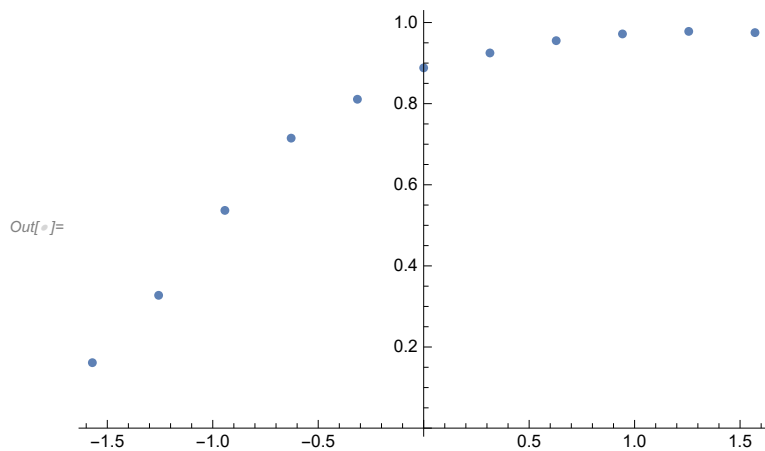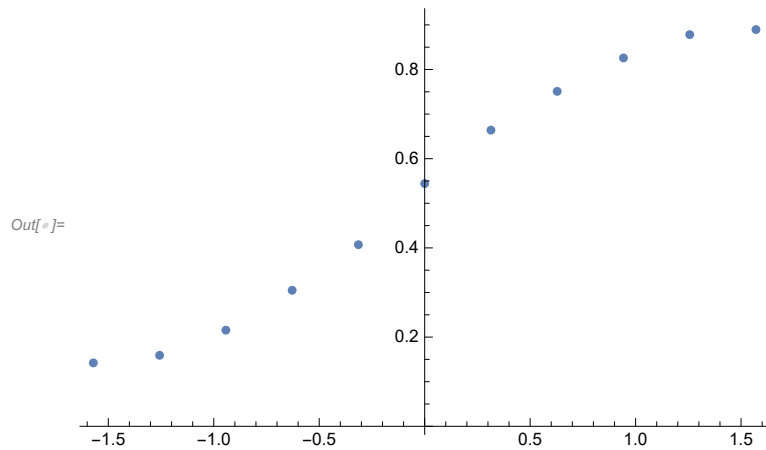
In[ ]:= **Show[cosTH, ExpCosSqibmoslo]**
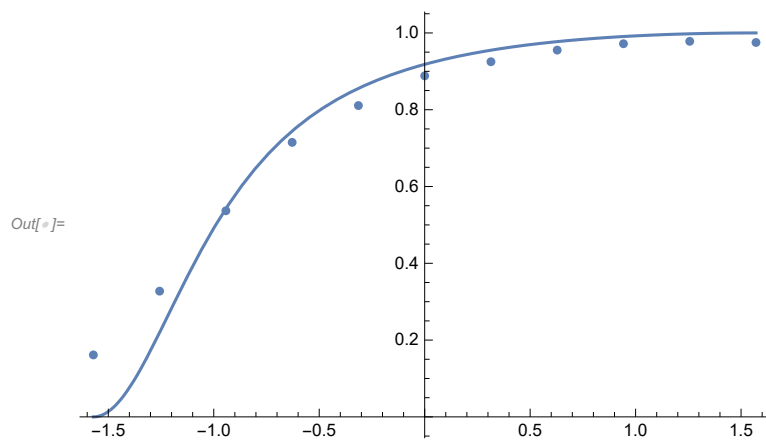
In[ ]:= **Show[decTH, ExpDecisivenessibmoslo]**

In[ ]:= **(*ibmq_manila*)**
ZeroZeroFirst10ibmqmanila = 7715
ZeroOneFirst10ibmqmanila = 152
OneZeroFirst10ibmqmanila = 194
OneOneFirst10ibmqmanila = 131

ZeroZeroFirst08ibmqmanila = 7408

```
ZeroOneFirst08ibmqmanila = 164
OneZeroFirst08ibmqmanila = 214
OneOneFirst08ibmqmanila = 406

ZeroZeroFirst06ibmqmanila = 6829
ZeroOneFirst06ibmqmanila = 172
OneZeroFirst06ibmqmanila = 211
OneOneFirst06ibmqmanila = 980

ZeroZeroFirst04ibmqmanila = 5796
ZeroOneFirst04ibmqmanila = 200
OneZeroFirst04ibmqmanila = 393
OneOneFirst04ibmqmanila = 1803

ZeroZeroFirst02ibmqmanila = 4748
ZeroOneFirst02ibmqmanila = 251
OneZeroFirst02ibmqmanila = 465
OneOneFirst02ibmqmanila = 2728

ZeroZeroFirst00ibmqmanila = 3667
ZeroOneFirst00ibmqmanila = 219
OneZeroFirst00ibmqmanila = 663
OneOneFirst00ibmqmanila = 3643

ZeroZeroSecond02ibmqmanila = 2435
ZeroOneSecond02ibmqmanila = 293
OneZeroSecond02ibmqmanila = 806
OneOneSecond02ibmqmanila = 4658

ZeroZeroSecond04ibmqmanila = 1478
ZeroOneSecond04ibmqmanila = 311
OneZeroSecond04ibmqmanila = 868
OneOneSecond04ibmqmanila = 5535

ZeroZeroSecond06ibmqmanila = 669
ZeroOneSecond06ibmqmanila = 352
OneZeroSecond06ibmqmanila = 903
OneOneSecond06ibmqmanila = 6268

ZeroZeroSecond08ibmqmanila = 230
ZeroOneSecond08ibmqmanila = 370
OneZeroSecond08ibmqmanila = 982
OneOneSecond08ibmqmanila = 6610

ZeroZeroSecond10ibmqmanila = 177
ZeroOneSecond10ibmqmanila = 414
OneZeroSecond10ibmqmanila = 1277
OneOneSecond10ibmqmanila = 6324
```

$$\text{CosSqibmqmanila} = \{\{-\frac{\pi}{2} * 1,$$

```
        ZeroZeroSecond10ibmqmanila / (OneZeroSecond10ibmqmanila + ZeroZeroSecond10ibmqmanila) },
      {- π/2 * 0.8, ZeroZeroSecond08ibmqmanila /

        (OneZeroSecond08ibmqmanila + ZeroZeroSecond08ibmqmanila) }, {- π/2 * 0.6,

      ZeroZeroSecond06ibmqmanila / (OneZeroSecond06ibmqmanila + ZeroZeroSecond06ibmqmanila) },
      {- π/2 * 0.4, ZeroZeroSecond04ibmqmanila /

        (OneZeroSecond04ibmqmanila + ZeroZeroSecond04ibmqmanila) }, {- π/2 * 0.2,

      ZeroZeroSecond02ibmqmanila / (OneZeroSecond02ibmqmanila + ZeroZeroSecond02ibmqmanila) },
      { π/2 * 0.0, ZeroZeroFirst00ibmqmanila /

        (OneZeroFirst00ibmqmanila + ZeroZeroFirst00ibmqmanila) }, { π/2 * 0.2,

      ZeroZeroFirst02ibmqmanila / (OneZeroFirst02ibmqmanila + ZeroZeroFirst02ibmqmanila) },
      { π/2 * 0.4, ZeroZeroFirst04ibmqmanila /

        (OneZeroFirst04ibmqmanila + ZeroZeroFirst04ibmqmanila) }, { π/2 * 0.6,

      ZeroZeroFirst06ibmqmanila / (OneZeroFirst06ibmqmanila + ZeroZeroFirst06ibmqmanila) },
      { π/2 * 0.8, ZeroZeroFirst08ibmqmanila /

        (OneZeroFirst08ibmqmanila + ZeroZeroFirst08ibmqmanila) }, { π/2 * 1,

      ZeroZeroFirst10ibmqmanila / (OneZeroFirst10ibmqmanila + ZeroZeroFirst10ibmqmanila) }}
Decisivenessibmqmanila = {{- π/2 * 1,

    (OneZeroSecond10ibmqmanila + ZeroZeroSecond10ibmqmanila) / 8192},
    {- π/2 * 0.8, (OneZeroSecond08ibmqmanila + ZeroZeroSecond08ibmqmanila) / 8192},

    {- π/2 * 0.6, (OneZeroSecond06ibmqmanila + ZeroZeroSecond06ibmqmanila) / 8192},

    {- π/2 * 0.4, (OneZeroSecond04ibmqmanila + ZeroZeroSecond04ibmqmanila) / 8192},

    {- π/2 * 0.2, (OneZeroSecond02ibmqmanila + ZeroZeroSecond02ibmqmanila) / 8192},

    {- π/2 * 0.0, (OneZeroFirst00ibmqmanila + ZeroZeroFirst00ibmqmanila) / 8192},

    { π/2 * 0.2, (OneZeroFirst02ibmqmanila + ZeroZeroFirst02ibmqmanila) / 8192},

    { π/2 * 0.4, (OneZeroFirst04ibmqmanila + ZeroZeroFirst04ibmqmanila) / 8192},

    { π/2 * 0.6, (OneZeroFirst06ibmqmanila + ZeroZeroFirst06ibmqmanila) / 8192},

    { π/2 * 0.8, (OneZeroFirst08ibmqmanila + ZeroZeroFirst08ibmqmanila) / 8192},

    { π/2 * 1.0, (OneZeroFirst10ibmqmanila + ZeroZeroFirst10ibmqmanila) / 8192}}
ExpCosSqibmqmanila = ListPlot[CosSqibmqmanila]
ExpDecisivenessibmqmanila = ListPlot[Decisivenessibmqmanila]
```

Out[ ]= 7715

Out[ ]= 152

Out[ ]= 194

Out[ ]= 131

Out[ ]= 7408

Out[ ]= 164

Out[ ]= 214

Out[ ]= 406

Out[ ]= 6829

Out[ ]= 172

Out[ ]= 211

Out[ ]= 980

Out[ ]= 5796

Out[ ]= 200

Out[ ]= 393

Out[ ]= 1803

Out[ ]= 4748

Out[ ]= 251

Out[ ]= 465

Out[ ]= 2728

Out[ ]= 3667

Out[ ]= 219

Out[ ]= 663

Out[ ]= 3643

Out[ ]= 2435

Out[ ]= 293

Out[ ]= 806

Out[ ]= 4658

Out[ ]= 1478

Out[ ]= 311

Out[ ]= 868

Out[•]= 5535

Out[•]= 669

Out[•]= 352

Out[•]= 903

Out[•]= 6268

Out[•]= 230

Out[•]= 370

Out[•]= 982

Out[•]= 6610

Out[•]= 177

Out[•]= 414

Out[•]= 1277

Out[•]= 6324
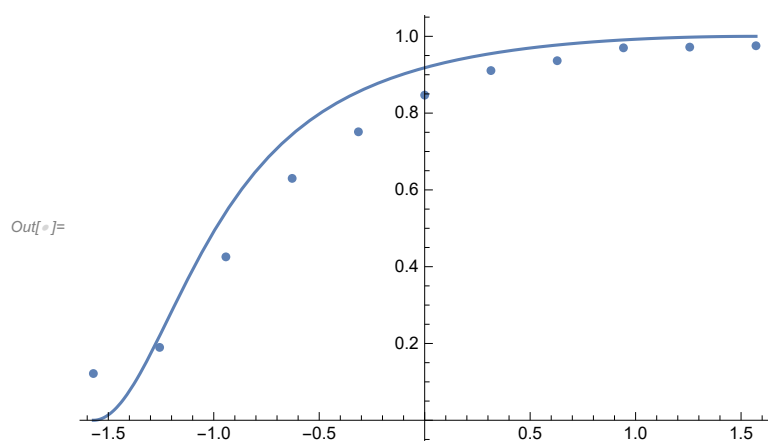
Out[•]= $\left\{\left\{-\frac{\pi}{2}, \frac{177}{1454}\right\}, \left\{-1.25664, \frac{115}{606}\right\}, \left\{-0.942478, \frac{223}{524}\right\}, \right.$
$\left\{-0.628319, \frac{739}{1173}\right\}, \left\{-0.314159, \frac{2435}{3241}\right\}, \left\{0., \frac{3667}{4330}\right\}, \left\{0.314159, \frac{4748}{5213}\right\},$
$\left\{0.628319, \frac{1932}{2063}\right\}, \left\{0.942478, \frac{6829}{7040}\right\}, \left\{1.25664, \frac{3704}{3811}\right\}, \left\{\frac{\pi}{2}, \frac{7715}{7909}\right\}\right\}$

Out[•]= $\left\{\left\{-\frac{\pi}{2}, \frac{727}{4096}\right\}, \left\{-1.25664, \frac{303}{2048}\right\}, \left\{-0.942478, \frac{393}{2048}\right\}, \right.$
$\left\{-0.628319, \frac{1173}{4096}\right\}, \left\{-0.314159, \frac{3241}{8192}\right\}, \left\{0., \frac{2165}{4096}\right\}, \left\{0.314159, \frac{5213}{8192}\right\},$
$\left\{0.628319, \frac{6189}{8192}\right\}, \left\{0.942478, \frac{55}{64}\right\}, \left\{1.25664, \frac{3811}{4096}\right\}, \left\{1.5708, \frac{7909}{8192}\right\}\right\}$

Out[•]=
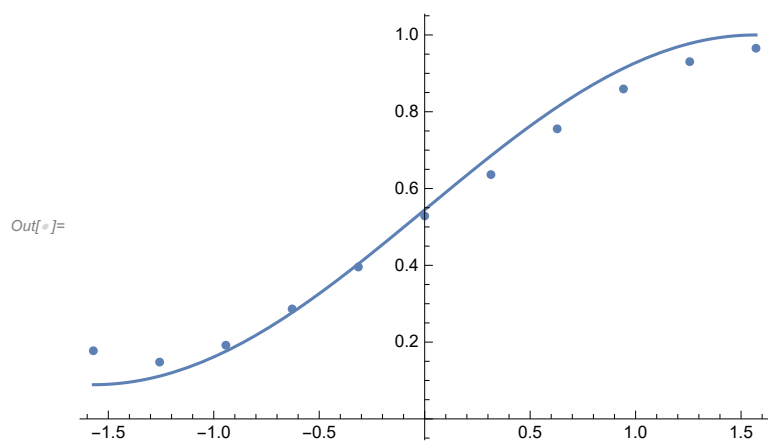
Out[ ]=
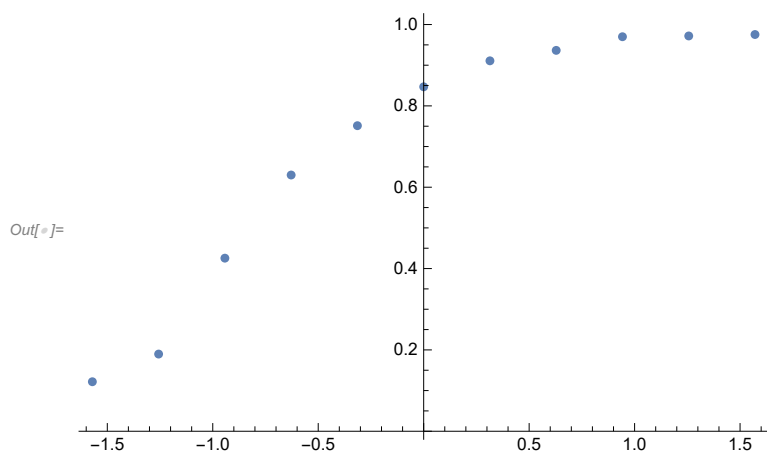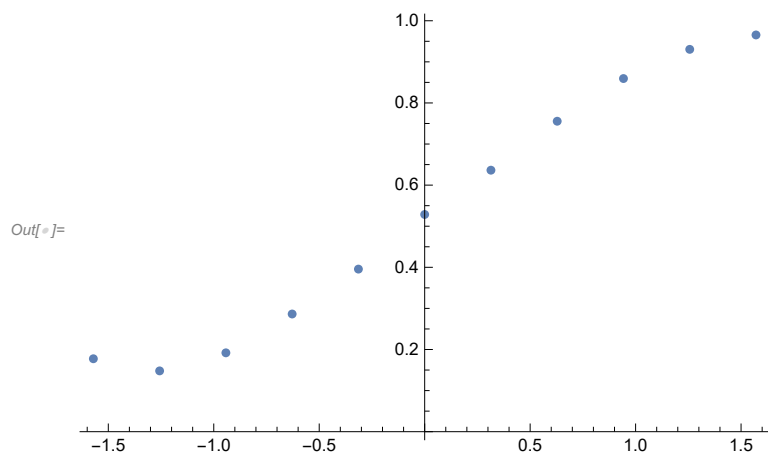
In[ ]:= **Show[cosTH, ExpCosSqibmqmanila]**

Out[ ]=

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

Out[ ]=

In[ ]:= **(*ibmq_quito*)**
ZeroZeroFirst10ibmqquito = 7715
ZeroOneFirst10ibmqquito = 148
OneZeroFirst10ibmqquito = 208
OneOneFirst10ibmqquito = 121

ZeroZeroFirst08ibmqquito = 7400

```
ZeroOneFirst08ibmqquito = 162
OneZeroFirst08ibmqquito = 249
OneOneFirst08ibmqquito = 381

ZeroZeroFirst06ibmqquito = 6747
ZeroOneFirst06ibmqquito = 191
OneZeroFirst06ibmqquito = 292
OneOneFirst06ibmqquito = 962

ZeroZeroFirst04ibmqquito = 5933
ZeroOneFirst04ibmqquito = 212
OneZeroFirst04ibmqquito = 412
OneOneFirst04ibmqquito = 1635

ZeroZeroFirst02ibmqquito = 4753
ZeroOneFirst02ibmqquito = 241
OneZeroFirst02ibmqquito = 554
OneOneFirst02ibmqquito = 2644

ZeroZeroFirst00ibmqquito = 3533
ZeroOneFirst00ibmqquito = 291
OneZeroFirst00ibmqquito = 690
OneOneFirst00ibmqquito = 3678

ZeroZeroSecond02ibmqquito = 2357
ZeroOneSecond02ibmqquito = 374
OneZeroSecond02ibmqquito = 851
OneOneSecond02ibmqquito = 4610

ZeroZeroSecond04ibmqquito = 1293
ZeroOneSecond04ibmqquito = 356
OneZeroSecond04ibmqquito = 1007
OneOneSecond04ibmqquito = 5536

ZeroZeroSecond06ibmqquito = 650
ZeroOneSecond06ibmqquito = 361
OneZeroSecond06ibmqquito = 1058
OneOneSecond06ibmqquito = 6123

ZeroZeroSecond08ibmqquito = 208
ZeroOneSecond08ibmqquito = 353
OneZeroSecond08ibmqquito = 1191
OneOneSecond08ibmqquito = 6440

ZeroZeroSecond10ibmqquito = 169
ZeroOneSecond10ibmqquito = 600
OneZeroSecond10ibmqquito = 1186
OneOneSecond10ibmqquito = 6237
```

$$\text{CosSqibmqquito} = \left\{\left\{-\frac{\pi}{2} * 1,\ \text{ZeroZeroSecond10ibmqquito} \Big/\right.\right.$$

```
        (OneZeroSecond10ibmqquito + ZeroZeroSecond10ibmqquito)}, {-π/2 * 0.8,
    ZeroZeroSecond08ibmqquito / (OneZeroSecond08ibmqquito + ZeroZeroSecond08ibmqquito)},
  {-π/2 * 0.6, ZeroZeroSecond06ibmqquito /
        (OneZeroSecond06ibmqquito + ZeroZeroSecond06ibmqquito)}, {-π/2 * 0.4,
    ZeroZeroSecond04ibmqquito / (OneZeroSecond04ibmqquito + ZeroZeroSecond04ibmqquito)},
  {-π/2 * 0.2, ZeroZeroSecond02ibmqquito /
        (OneZeroSecond02ibmqquito + ZeroZeroSecond02ibmqquito)}, {π/2 * 0.0,
    ZeroZeroFirst00ibmqquito / (OneZeroFirst00ibmqquito + ZeroZeroFirst00ibmqquito)},
  {π/2 * 0.2, ZeroZeroFirst02ibmqquito /
        (OneZeroFirst02ibmqquito + ZeroZeroFirst02ibmqquito)}, {π/2 * 0.4,
    ZeroZeroFirst04ibmqquito / (OneZeroFirst04ibmqquito + ZeroZeroFirst04ibmqquito)},
  {π/2 * 0.6, ZeroZeroFirst06ibmqquito /
        (OneZeroFirst06ibmqquito + ZeroZeroFirst06ibmqquito)}, {π/2 * 0.8,
    ZeroZeroFirst08ibmqquito / (OneZeroFirst08ibmqquito + ZeroZeroFirst08ibmqquito)},
  {π/2 * 1, ZeroZeroFirst10ibmqquito / (OneZeroFirst10ibmqquito + ZeroZeroFirst10ibmqquito)}}
Decisivenessibmqquito =
  {{-π/2 * 1, (OneZeroSecond10ibmqquito + ZeroZeroSecond10ibmqquito) / 8192},
   {-π/2 * 0.8, (OneZeroSecond08ibmqquito + ZeroZeroSecond08ibmqquito) / 8192},
   {-π/2 * 0.6, (OneZeroSecond06ibmqquito + ZeroZeroSecond06ibmqquito) / 8192},
   {-π/2 * 0.4, (OneZeroSecond04ibmqquito + ZeroZeroSecond04ibmqquito) / 8192},
   {-π/2 * 0.2, (OneZeroSecond02ibmqquito + ZeroZeroSecond02ibmqquito) / 8192},
   {-π/2 * 0.0, (OneZeroFirst00ibmqquito + ZeroZeroFirst00ibmqquito) / 8192},
   {π/2 * 0.2, (OneZeroFirst02ibmqquito + ZeroZeroFirst02ibmqquito) / 8192},
   {π/2 * 0.4, (OneZeroFirst04ibmqquito + ZeroZeroFirst04ibmqquito) / 8192},
   {π/2 * 0.6, (OneZeroFirst06ibmqquito + ZeroZeroFirst06ibmqquito) / 8192},
   {π/2 * 0.8, (OneZeroFirst08ibmqquito + ZeroZeroFirst08ibmqquito) / 8192},
   {π/2 * 1.0, (OneZeroFirst10ibmqquito + ZeroZeroFirst10ibmqquito) / 8192}}
ExpCosSqibmqquito = ListPlot[CosSqibmqquito]
ExpDecisivenessibmqquito = ListPlot[Decisivenessibmqquito]
```

Out[•]= 7715

Out[•]= 148

Out[•]= 208

Out[•]= 121

Out[•]= 7400

Out[•]= 162

Out[•]= 249

Out[•]= 381

Out[•]= 6747

Out[•]= 191

Out[•]= 292

Out[•]= 962

Out[•]= 5933

Out[•]= 212

Out[•]= 412

Out[•]= 1635

Out[•]= 4753

Out[•]= 241

Out[•]= 554

Out[•]= 2644

Out[•]= 3533

Out[•]= 291

Out[•]= 690

Out[•]= 3678

Out[•]= 2357

Out[•]= 374

Out[•]= 851

Out[•]= 4610

Out[•]= 1293

Out[•]= 356

Out[•]= 1007

Out[ ]= 5536

Out[ ]= 650

Out[ ]= 361

Out[ ]= 1058

Out[ ]= 6123

Out[ ]= 208

Out[ ]= 353

Out[ ]= 1191

Out[ ]= 6440

Out[ ]= 169

Out[ ]= 600

*Out[ ]=* 1186

Out[ ]= 6237

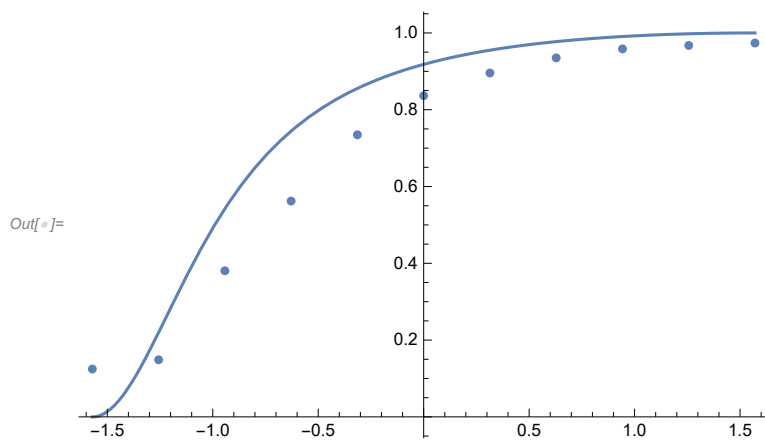*Out[ ]=* $\left\{\left\{-\frac{\pi}{2}, \frac{169}{1355}\right\}, \{-1.25664, \frac{208}{1399}\}, \{-0.942478, \frac{325}{854}\},\right.$
$\{-0.628319, \frac{1293}{2300}\}, \{-0.314159, \frac{2357}{3208}\}, \{0., \frac{3533}{4223}\}, \{0.314159, \frac{4753}{5307}\},$
$\left.\{0.628319, \frac{5933}{6345}\}, \{0.942478, \frac{6747}{7039}\}, \{1.25664, \frac{7400}{7649}\}, \{\frac{\pi}{2}, \frac{7715}{7923}\}\right\}$

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, \frac{1355}{8192}\right\}, \{-1.25664, \frac{1399}{8192}\}, \{-0.942478, \frac{427}{2048}\},\right.$
$\{-0.628319, \frac{575}{2048}\}, \{-0.314159, \frac{401}{1024}\}, \{0., \frac{4223}{8192}\}, \{0.314159, \frac{5307}{8192}\},$
$\left.\{0.628319, \frac{6345}{8192}\}, \{0.942478, \frac{7039}{8192}\}, \{1.25664, \frac{7649}{8192}\}, \{1.5708, \frac{7923}{8192}\}\right\}$

Out[ ]=

Out[●]=
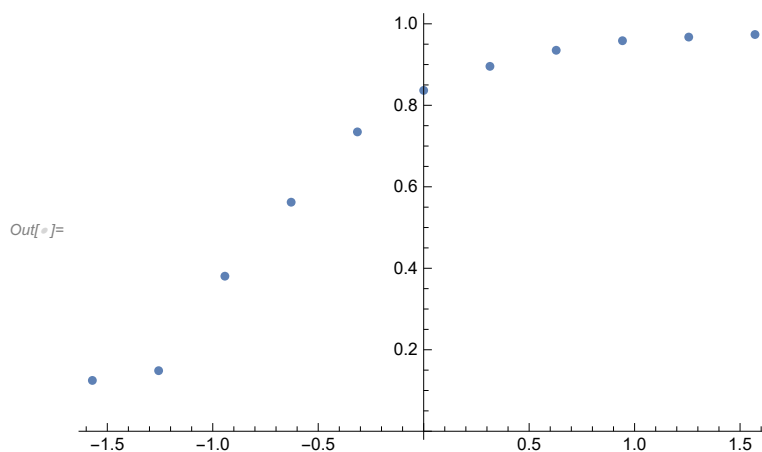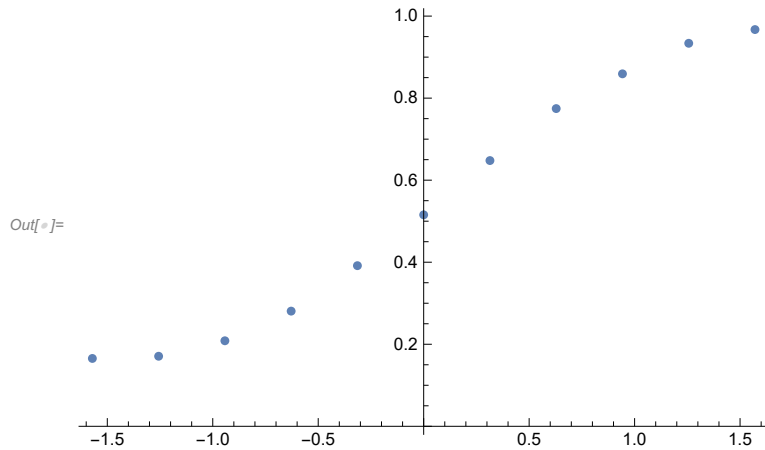
In[●]:= **Show[cosTH, ExpCosSqibmqquito]**

Out[●]=

In[●]:= **Show[decTH, ExpDecisivenessibmqquito]**

Out[●]=
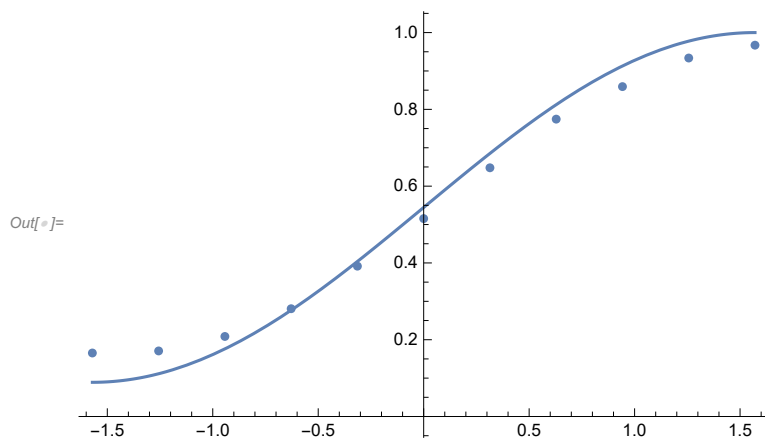
In[●]:= **(*ibmq_lima*)**
ZeroZeroFirst10ibmqlima = 7964
ZeroOneFirst10ibmqlima = 89
OneZeroFirst10ibmqlima = 74
OneOneFirst10ibmqlima = 65

ZeroZeroFirst08ibmqlima = 7735

```
ZeroOneFirst08ibmqlima = 90
OneZeroFirst08ibmqlima = 111
OneOneFirst08ibmqlima = 256

ZeroZeroFirst06ibmqlima = 7110
ZeroOneFirst06ibmqlima = 114
OneZeroFirst06ibmqlima = 157
OneOneFirst06ibmqlima = 811

ZeroZeroFirst04ibmqlima = 6264
ZeroOneFirst04ibmqlima = 139
OneZeroFirst04ibmqlima = 250
OneOneFirst04ibmqlima = 1539

ZeroZeroFirst02ibmqlima = 5079
ZeroOneFirst02ibmqlima = 176
OneZeroFirst02ibmqlima = 365
OneOneFirst02ibmqlima = 2572

ZeroZeroFirst00ibmqlima = 3802
ZeroOneFirst00ibmqlima = 184
OneZeroFirst00ibmqlima = 491
OneOneFirst00ibmqlima = 3715

ZeroZeroSecond02ibmqlima = 2623
ZeroOneSecond02ibmqlima = 283
OneZeroSecond02ibmqlima = 674
OneOneSecond02ibmqlima = 4612

ZeroZeroSecond04ibmqlima = 1567
ZeroOneSecond04ibmqlima = 273
OneZeroSecond04ibmqlima = 786
OneOneSecond04ibmqlima = 5566

ZeroZeroSecond06ibmqlima = 752
ZeroOneSecond06ibmqlima = 308
OneZeroSecond06ibmqlima = 879
OneOneSecond06ibmqlima = 6253

ZeroZeroSecond08ibmqlima = 242
ZeroOneSecond08ibmqlima = 317
OneZeroSecond08ibmqlima = 922
OneOneSecond08ibmqlima = 6711

ZeroZeroSecond10ibmqlima = 114
ZeroOneSecond10ibmqlima = 348
OneZeroSecond10ibmqlima = 1032
OneOneSecond10ibmqlima = 6698

CosSqibmqlima =
```

```mathematica
{{-π/2 * 1, ZeroZeroSecond10ibmqlima / (OneZeroSecond10ibmqlima + ZeroZeroSecond10ibmqlima)},

 {-π/2 * 0.8, ZeroZeroSecond08ibmqlima /

   (OneZeroSecond08ibmqlima + ZeroZeroSecond08ibmqlima)}, {-π/2 * 0.6,

  ZeroZeroSecond06ibmqlima / (OneZeroSecond06ibmqlima + ZeroZeroSecond06ibmqlima)},

 {-π/2 * 0.4, ZeroZeroSecond04ibmqlima /

   (OneZeroSecond04ibmqlima + ZeroZeroSecond04ibmqlima)}, {-π/2 * 0.2,

  ZeroZeroSecond02ibmqlima / (OneZeroSecond02ibmqlima + ZeroZeroSecond02ibmqlima)},

 {π/2 * 0.0, ZeroZeroFirst00ibmqlima / (OneZeroFirst00ibmqlima + ZeroZeroFirst00ibmqlima)},

 {π/2 * 0.2, ZeroZeroFirst02ibmqlima / (OneZeroFirst02ibmqlima + ZeroZeroFirst02ibmqlima)},

 {π/2 * 0.4, ZeroZeroFirst04ibmqlima / (OneZeroFirst04ibmqlima + ZeroZeroFirst04ibmqlima)},

 {π/2 * 0.6, ZeroZeroFirst06ibmqlima / (OneZeroFirst06ibmqlima + ZeroZeroFirst06ibmqlima)},

 {π/2 * 0.8, ZeroZeroFirst08ibmqlima / (OneZeroFirst08ibmqlima + ZeroZeroFirst08ibmqlima)},

 {π/2 * 1, ZeroZeroFirst10ibmqlima / (OneZeroFirst10ibmqlima + ZeroZeroFirst10ibmqlima)}}}
Decisivenessibmqlima =
 {{-π/2 * 1, (OneZeroSecond10ibmqlima + ZeroZeroSecond10ibmqlima) / 8192},

  {-π/2 * 0.8, (OneZeroSecond08ibmqlima + ZeroZeroSecond08ibmqlima) / 8192},

  {-π/2 * 0.6, (OneZeroSecond06ibmqlima + ZeroZeroSecond06ibmqlima) / 8192},

  {-π/2 * 0.4, (OneZeroSecond04ibmqlima + ZeroZeroSecond04ibmqlima) / 8192},

  {-π/2 * 0.2, (OneZeroSecond02ibmqlima + ZeroZeroSecond02ibmqlima) / 8192},

  {-π/2 * 0.0, (OneZeroFirst00ibmqlima + ZeroZeroFirst00ibmqlima) / 8192},

  {π/2 * 0.2, (OneZeroFirst02ibmqlima + ZeroZeroFirst02ibmqlima) / 8192},

  {π/2 * 0.4, (OneZeroFirst04ibmqlima + ZeroZeroFirst04ibmqlima) / 8192},

  {π/2 * 0.6, (OneZeroFirst06ibmqlima + ZeroZeroFirst06ibmqlima) / 8192},

  {π/2 * 0.8, (OneZeroFirst08ibmqlima + ZeroZeroFirst08ibmqlima) / 8192},

  {π/2 * 1.0, (OneZeroFirst10ibmqlima + ZeroZeroFirst10ibmqlima) / 8192}}
ExpCosSqibmqlima = ListPlot[CosSqibmqlima]
ExpDecisivenessibmqlima = ListPlot[Decisivenessibmqlima]
```

Out[●]= 7964

Out[•]= 89

Out[•]= 74

Out[•]= 65

Out[•]= 7735

Out[•]= 90

Out[•]= 111

Out[•]= 256

Out[•]= 7110

Out[•]= 114

Out[•]= 157

Out[•]= 811

Out[•]= 6264

Out[•]= 139

Out[•]= 250

Out[•]= 1539

Out[•]= 5079

Out[•]= 176

Out[•]= 365

Out[•]= 2572

Out[•]= 3802

Out[•]= 184

Out[•]= 491

Out[•]= 3715

Out[•]= 2623

Out[•]= 283

Out[•]= 674

Out[•]= 4612

Out[•]= 1567

Out[•]= 273

Out[•]= 786

Out[•]= 5566

Out[•]= 752

Out[•]= 308

Out[•]= 879

Out[•]= 6253

Out[•]= 242

Out[•]= 317

Out[•]= 922

Out[•]= 6711
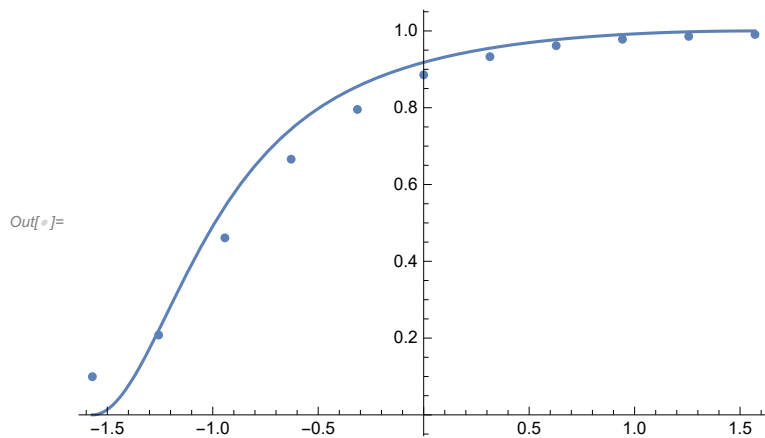
Out[•]= 114

Out[•]= 348

Out[•]= 1032

Out[•]= 6698

Out[•]= $\left\{\left\{-\dfrac{\pi}{2}, \dfrac{19}{191}\right\}, \left\{-1.25664, \dfrac{121}{582}\right\}, \left\{-0.942478, \dfrac{752}{1631}\right\},\right.$
$\left\{-0.628319, \dfrac{1567}{2353}\right\}, \left\{-0.314159, \dfrac{2623}{3297}\right\}, \left\{0., \dfrac{3802}{4293}\right\}, \left\{0.314159, \dfrac{5079}{5444}\right\},$
$\left.\left\{0.628319, \dfrac{3132}{3257}\right\}, \left\{0.942478, \dfrac{7110}{7267}\right\}, \left\{1.25664, \dfrac{7735}{7846}\right\}, \left\{\dfrac{\pi}{2}, \dfrac{3982}{4019}\right\}\right\}$

Out[•]= $\left\{\left\{-\dfrac{\pi}{2}, \dfrac{573}{4096}\right\}, \left\{-1.25664, \dfrac{291}{2048}\right\}, \left\{-0.942478, \dfrac{1631}{8192}\right\},\right.$
$\left\{-0.628319, \dfrac{2353}{8192}\right\}, \left\{-0.314159, \dfrac{3297}{8192}\right\}, \left\{0., \dfrac{4293}{8192}\right\}, \left\{0.314159, \dfrac{1361}{2048}\right\},$
$\left.\left\{0.628319, \dfrac{3257}{4096}\right\}, \left\{0.942478, \dfrac{7267}{8192}\right\}, \left\{1.25664, \dfrac{3923}{4096}\right\}, \left\{1.5708, \dfrac{4019}{4096}\right\}\right\}$
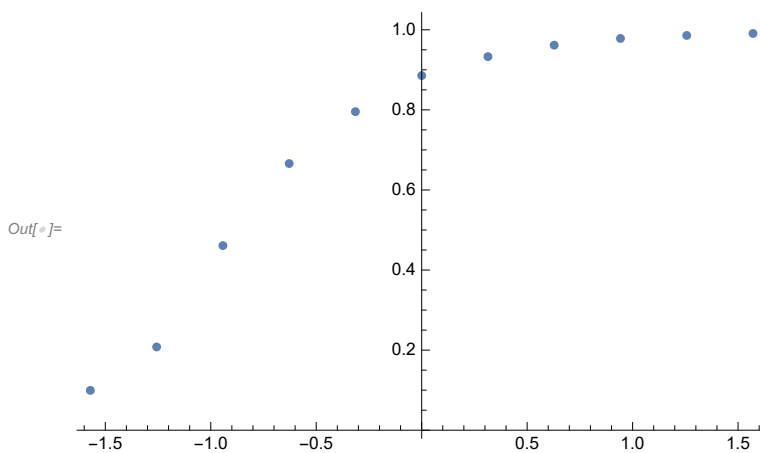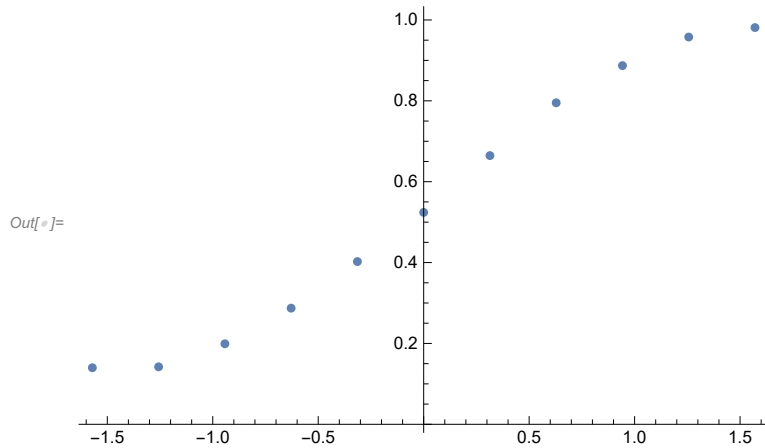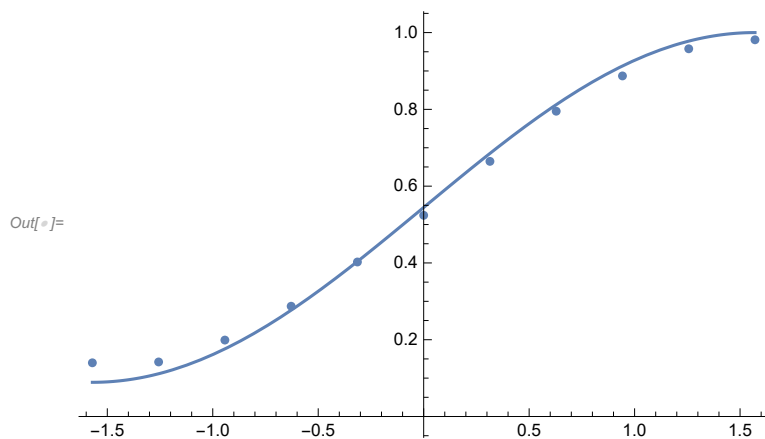
Out[•]=

Out[ ]=

In[ ]:= Show[cosTH, ExpCosSqibmqlima]

Out[ ]=

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

Out[ ]=

In[ ]:= **(*ibmq_qasm_simulator*)**
ZeroZeroFirst10ibmqqasmsimulator = 8192
ZeroOneFirst10ibmqqasmsimulator = 0
OneZeroFirst10ibmqqasmsimulator = 0
OneOneFirst10ibmqqasmsimulator = 0

ZeroZeroFirst08ibmqqasmsimulator = 7991

```
ZeroOneFirst08ibmqqasmsimulator = 0
OneZeroFirst08ibmqqasmsimulator = 15
OneOneFirst08ibmqqasmsimulator = 186

ZeroZeroFirst06ibmqqasmsimulator = 7374
ZeroOneFirst06ibmqqasmsimulator = 0
OneZeroFirst06ibmqqasmsimulator = 61
OneOneFirst06ibmqqasmsimulator = 757

ZeroZeroFirst04ibmqqasmsimulator = 6533
ZeroOneFirst04ibmqqasmsimulator = 0
OneZeroFirst04ibmqqasmsimulator = 126
OneOneFirst04ibmqqasmsimulator = 1533

ZeroZeroFirst02ibmqqasmsimulator = 5320
ZeroOneFirst02ibmqqasmsimulator = 0
OneZeroFirst02ibmqqasmsimulator = 231
OneOneFirst02ibmqqasmsimulator = 2641

ZeroZeroFirst00ibmqqasmsimulator = 4116
ZeroOneFirst00ibmqqasmsimulator = 0
OneZeroFirst00ibmqqasmsimulator = 359
OneOneFirst00ibmqqasmsimulator = 3717

ZeroZeroSecond02ibmqqasmsimulator = 2838
ZeroOneSecond02ibmqqasmsimulator = 0
OneZeroSecond02ibmqqasmsimulator = 486
OneOneSecond02ibmqqasmsimulator = 4868

ZeroZeroSecond04ibmqqasmsimulator = 1680
ZeroOneSecond04ibmqqasmsimulator = 0
OneZeroSecond04ibmqqasmsimulator = 561
OneOneSecond04ibmqqasmsimulator = 5951

ZeroZeroSecond06ibmqqasmsimulator = 794
ZeroOneSecond06ibmqqasmsimulator = 0
OneZeroSecond06ibmqqasmsimulator = 666
OneOneSecond06ibmqqasmsimulator = 6732

ZeroZeroSecond08ibmqqasmsimulator = 187
ZeroOneSecond08ibmqqasmsimulator = 0
OneZeroSecond08ibmqqasmsimulator = 711
OneOneSecond08ibmqqasmsimulator = 7294

ZeroZeroSecond10ibmqqasmsimulator = 0
ZeroOneSecond10ibmqqasmsimulator = 0
OneZeroSecond10ibmqqasmsimulator = 765
OneOneSecond10ibmqqasmsimulator = 7427
```

$$\text{CosSqibmqqasmsimulator} = \left\{ \left\{ -\frac{\pi}{2} * 1, \text{ZeroZeroSecond10ibmqqasmsimulator} \Big/ \right. \right.$$

```
        (OneZeroSecond10ibmqqasmsimulator + ZeroZeroSecond10ibmqqasmsimulator)},
      {- π/2 * 0.8, ZeroZeroSecond08ibmqqasmsimulator /

        (OneZeroSecond08ibmqqasmsimulator + ZeroZeroSecond08ibmqqasmsimulator)},
      {- π/2 * 0.6, ZeroZeroSecond06ibmqqasmsimulator /

        (OneZeroSecond06ibmqqasmsimulator + ZeroZeroSecond06ibmqqasmsimulator)},
      {- π/2 * 0.4, ZeroZeroSecond04ibmqqasmsimulator /

        (OneZeroSecond04ibmqqasmsimulator + ZeroZeroSecond04ibmqqasmsimulator)},
      {- π/2 * 0.2, ZeroZeroSecond02ibmqqasmsimulator /

        (OneZeroSecond02ibmqqasmsimulator + ZeroZeroSecond02ibmqqasmsimulator)},
      {π/2 * 0.0, ZeroZeroFirst00ibmqqasmsimulator /

        (OneZeroFirst00ibmqqasmsimulator + ZeroZeroFirst00ibmqqasmsimulator)},
      {π/2 * 0.2, ZeroZeroFirst02ibmqqasmsimulator /

        (OneZeroFirst02ibmqqasmsimulator + ZeroZeroFirst02ibmqqasmsimulator)},
      {π/2 * 0.4, ZeroZeroFirst04ibmqqasmsimulator /

        (OneZeroFirst04ibmqqasmsimulator + ZeroZeroFirst04ibmqqasmsimulator)},
      {π/2 * 0.6, ZeroZeroFirst06ibmqqasmsimulator /

        (OneZeroFirst06ibmqqasmsimulator + ZeroZeroFirst06ibmqqasmsimulator)},
      {π/2 * 0.8, ZeroZeroFirst08ibmqqasmsimulator /

        (OneZeroFirst08ibmqqasmsimulator + ZeroZeroFirst08ibmqqasmsimulator)},
      {π/2 * 1, ZeroZeroFirst10ibmqqasmsimulator /

        (OneZeroFirst10ibmqqasmsimulator + ZeroZeroFirst10ibmqqasmsimulator)}}
   Decisivenessibmqqasmsimulator = {{- π/2 * 1,

     (OneZeroSecond10ibmqqasmsimulator + ZeroZeroSecond10ibmqqasmsimulator) / 8192},
    {- π/2 * 0.8, (OneZeroSecond08ibmqqasmsimulator + ZeroZeroSecond08ibmqqasmsimulator) / 8192},

    {- π/2 * 0.6, (OneZeroSecond06ibmqqasmsimulator + ZeroZeroSecond06ibmqqasmsimulator) / 8192},

    {- π/2 * 0.4, (OneZeroSecond04ibmqqasmsimulator + ZeroZeroSecond04ibmqqasmsimulator) / 8192},

    {- π/2 * 0.2, (OneZeroSecond02ibmqqasmsimulator + ZeroZeroSecond02ibmqqasmsimulator) / 8192},

    {- π/2 * 0.0, (OneZeroFirst00ibmqqasmsimulator + ZeroZeroFirst00ibmqqasmsimulator) / 8192},

    {π/2 * 0.2, (OneZeroFirst02ibmqqasmsimulator + ZeroZeroFirst02ibmqqasmsimulator) / 8192},

    {π/2 * 0.4, (OneZeroFirst04ibmqqasmsimulator + ZeroZeroFirst04ibmqqasmsimulator) / 8192},

    {π/2 * 0.6, (OneZeroFirst06ibmqqasmsimulator + ZeroZeroFirst06ibmqqasmsimulator) / 8192},
```

$$\left\{\frac{\pi}{2} * 0.8, \ (\text{OneZeroFirst08ibmqqasmsimulator} + \text{ZeroZeroFirst08ibmqqasmsimulator}) \big/ 8192\right\},$$

$$\left\{\frac{\pi}{2} * 1.0, \ (\text{OneZeroFirst10ibmqqasmsimulator} + \text{ZeroZeroFirst10ibmqqasmsimulator}) \big/ 8192\right\}\right\}$$

```
ExpCosSqibmqqasmsimulator = ListPlot[CosSqibmqqasmsimulator]
ExpDecisivenessibmqqasmsimulator = ListPlot[Decisivenessibmqqasmsimulator]
```

Out[•]= 8192

Out[•]= 0

Out[•]= 0

Out[•]= 0

Out[•]= 7991

Out[•]= 0

Out[•]= 15

Out[•]= 186

Out[•]= 7374

Out[•]= 0

Out[•]= 61

Out[•]= 757

Out[•]= 6533

Out[•]= 0

Out[•]= 126

Out[•]= 1533

Out[•]= 5320

Out[•]= 0

Out[•]= 231

Out[•]= 2641

Out[•]= 4116

Out[•]= 0

Out[•]= 359

Out[•]= 3717

Out[•]= 2838

Out[•]= 0

Out[•]= 486

Out[●]= 4868

Out[●]= 1680

Out[●]= 0

Out[●]= 561

Out[●]= 5951

Out[●]= 794

Out[●]= 0

Out[●]= 666

Out[●]= 6732

Out[●]= 187

Out[●]= 0
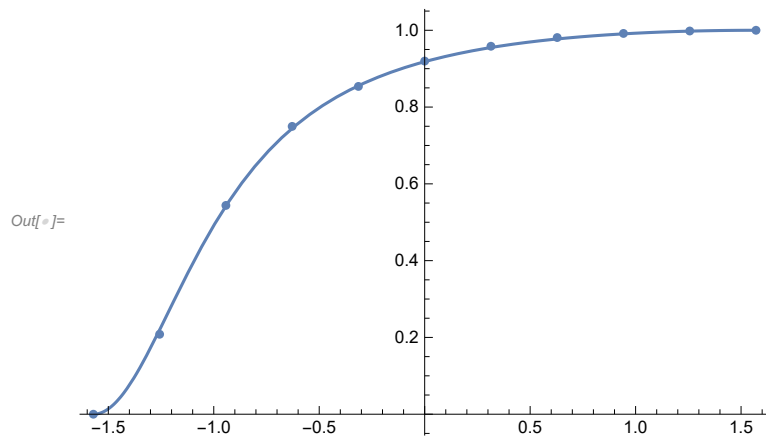
Out[●]= 711

Out[●]= 7294

Out[●]= 0

Out[●]= 0

Out[●]= 765

Out[●]= 7427

Out[●]= $\left\{\left\{-\frac{\pi}{2}, 0\right\}, \left\{-1.25664, \frac{187}{898}\right\}, \left\{-0.942478, \frac{397}{730}\right\},\right.$
$\left\{-0.628319, \frac{560}{747}\right\}, \left\{-0.314159, \frac{473}{554}\right\}, \left\{0., \frac{4116}{4475}\right\}, \left\{0.314159, \frac{760}{793}\right\},$
$\left\{0.628319, \frac{6533}{6659}\right\}, \left\{0.942478, \frac{7374}{7435}\right\}, \left\{1.25664, \frac{7991}{8006}\right\}, \left\{\frac{\pi}{2}, 1\right\}\right\}$

Out[●]= $\left\{\left\{-\frac{\pi}{2}, \frac{765}{8192}\right\}, \left\{-1.25664, \frac{449}{4096}\right\}, \left\{-0.942478, \frac{365}{2048}\right\},\right.$
$\left\{-0.628319, \frac{2241}{8192}\right\}, \left\{-0.314159, \frac{831}{2048}\right\}, \left\{0., \frac{4475}{8192}\right\}, \left\{0.314159, \frac{5551}{8192}\right\},$
$\left\{0.628319, \frac{6659}{8192}\right\}, \left\{0.942478, \frac{7435}{8192}\right\}, \left\{1.25664, \frac{4003}{4096}\right\}, \left\{1.5708, 1\right\}\right\}$
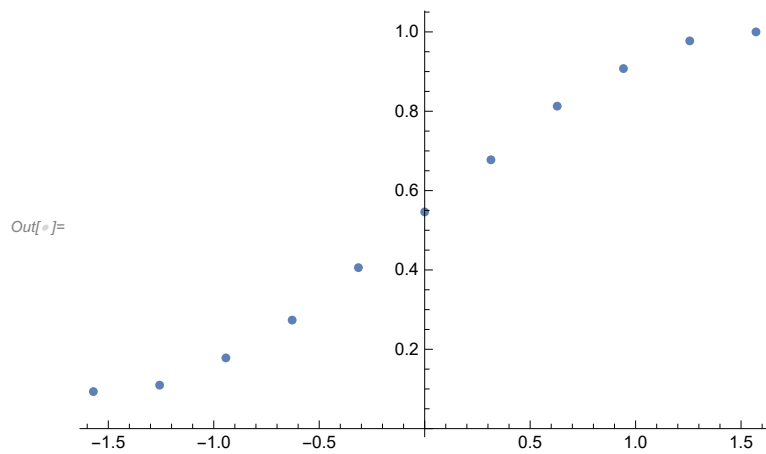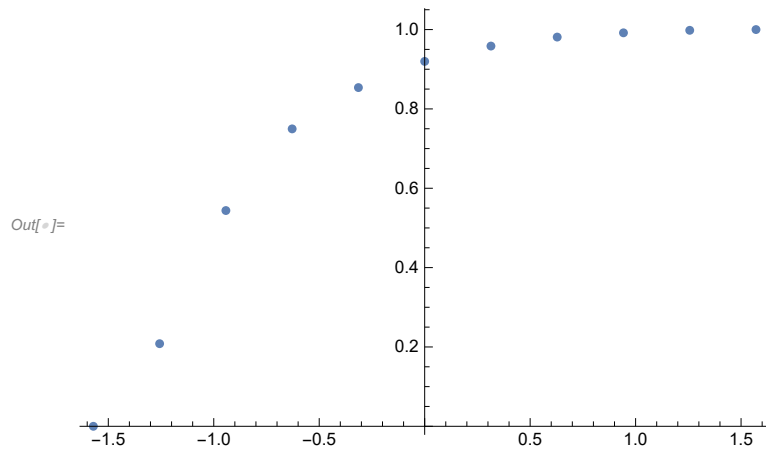
Out[ ]=

Out[ ]=

In[ ]:= **Show[cosTH, ExpCosSqibmqqasmsimulator]**

Out[ ]=

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

Out[ ]=
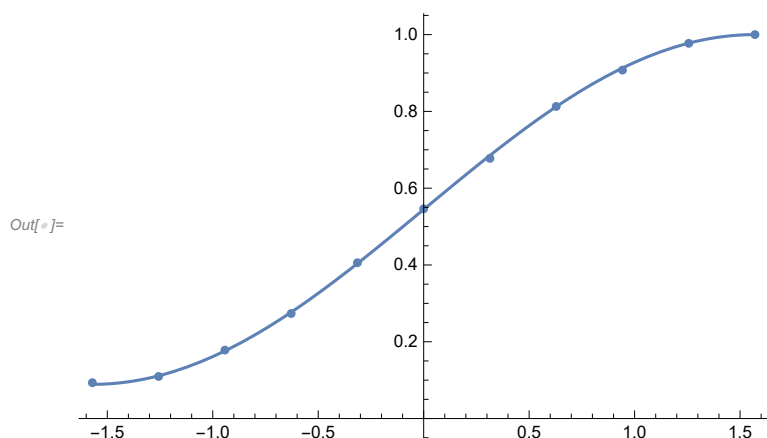
In[ ]:= **(*ibmq_belem*)**
ZeroZeroFirst10ibmqbelem = 7356
ZeroOneFirst10ibmqbelem = 231
OneZeroFirst10ibmqbelem = 270
OneOneFirst10ibmqbelem = 335

ZeroZeroFirst08ibmqbelem = 7119
ZeroOneFirst08ibmqbelem = 230
OneZeroFirst08ibmqbelem = 291
OneOneFirst08ibmqbelem = 552

ZeroZeroFirst06ibmqbelem = 6478
ZeroOneFirst06ibmqbelem = 266
OneZeroFirst06ibmqbelem = 320
OneOneFirst06ibmqbelem = 1128

ZeroZeroFirst04ibmqbelem = 5760
ZeroOneFirst04ibmqbelem = 342
OneZeroFirst04ibmqbelem = 372
OneOneFirst04ibmqbelem = 1718

ZeroZeroFirst02ibmqbelem = 4763
ZeroOneFirst02ibmqbelem = 355
OneZeroFirst02ibmqbelem = 472
OneOneFirst02ibmqbelem = 2602

ZeroZeroFirst00ibmqbelem = 3642
ZeroOneFirst00ibmqbelem = 345
OneZeroFirst00ibmqbelem = 676
OneOneFirst00ibmqbelem = 3529

ZeroZeroSecond02ibmqbelem = 2567
ZeroOneSecond02ibmqbelem = 438
OneZeroSecond02ibmqbelem = 783
OneOneSecond02ibmqbelem = 4404

```
ZeroZeroSecond04ibmqbelem = 1614
ZeroOneSecond04ibmqbelem = 422
OneZeroSecond04ibmqbelem = 889
OneOneSecond04ibmqbelem = 5267

ZeroZeroSecond06ibmqbelem = 893
ZeroOneSecond06ibmqbelem = 396
OneZeroSecond06ibmqbelem = 926
OneOneSecond06ibmqbelem = 5977

ZeroZeroSecond08ibmqbelem = 487
ZeroOneSecond08ibmqbelem = 440
OneZeroSecond08ibmqbelem = 1080
OneOneSecond08ibmqbelem = 6185

ZeroZeroSecond10ibmqbelem = 320
ZeroOneSecond10ibmqbelem = 471
OneZeroSecond10ibmqbelem = 1056
OneOneSecond10ibmqbelem = 6345
```

$$\text{CosSqibmqbelem} = \Big\{\Big\{-\frac{\pi}{2} * 1, \text{ZeroZeroSecond10ibmqbelem} \Big/$$

$$\left(\text{OneZeroSecond10ibmqbelem} + \text{ZeroZeroSecond10ibmqbelem}\right)\Big\}, \Big\{-\frac{\pi}{2} * 0.8,$$

$$\text{ZeroZeroSecond08ibmqbelem} \Big/ \left(\text{OneZeroSecond08ibmqbelem} + \text{ZeroZeroSecond08ibmqbelem}\right)\Big\},$$

$$\Big\{-\frac{\pi}{2} * 0.6, \text{ZeroZeroSecond06ibmqbelem} \Big/$$

$$\left(\text{OneZeroSecond06ibmqbelem} + \text{ZeroZeroSecond06ibmqbelem}\right)\Big\}, \Big\{-\frac{\pi}{2} * 0.4,$$

$$\text{ZeroZeroSecond04ibmqbelem} \Big/ \left(\text{OneZeroSecond04ibmqbelem} + \text{ZeroZeroSecond04ibmqbelem}\right)\Big\},$$

$$\Big\{-\frac{\pi}{2} * 0.2, \text{ZeroZeroSecond02ibmqbelem} \Big/$$

$$\left(\text{OneZeroSecond02ibmqbelem} + \text{ZeroZeroSecond02ibmqbelem}\right)\Big\}, \Big\{\frac{\pi}{2} * 0.0,$$

$$\text{ZeroZeroFirst00ibmqbelem} \Big/ \left(\text{OneZeroFirst00ibmqbelem} + \text{ZeroZeroFirst00ibmqbelem}\right)\Big\},$$

$$\Big\{\frac{\pi}{2} * 0.2, \text{ZeroZeroFirst02ibmqbelem} \Big/$$

$$\left(\text{OneZeroFirst02ibmqbelem} + \text{ZeroZeroFirst02ibmqbelem}\right)\Big\}, \Big\{\frac{\pi}{2} * 0.4,$$

$$\text{ZeroZeroFirst04ibmqbelem} \Big/ \left(\text{OneZeroFirst04ibmqbelem} + \text{ZeroZeroFirst04ibmqbelem}\right)\Big\},$$

$$\Big\{\frac{\pi}{2} * 0.6, \text{ZeroZeroFirst06ibmqbelem} \Big/$$

$$\left(\text{OneZeroFirst06ibmqbelem} + \text{ZeroZeroFirst06ibmqbelem}\right)\Big\}, \Big\{\frac{\pi}{2} * 0.8,$$

$$\text{ZeroZeroFirst08ibmqbelem} \Big/ \left(\text{OneZeroFirst08ibmqbelem} + \text{ZeroZeroFirst08ibmqbelem}\right)\Big\},$$

$$\Big\{\frac{\pi}{2} * 1, \text{ZeroZeroFirst10ibmqbelem} \Big/ \left(\text{OneZeroFirst10ibmqbelem} + \text{ZeroZeroFirst10ibmqbelem}\right)\Big\}\Big\}$$

$$\text{Decisivenessibmqbelem} =$$

$$\Big\{\Big\{-\frac{\pi}{2} * 1, \left(\text{OneZeroSecond10ibmqbelem} + \text{ZeroZeroSecond10ibmqbelem}\right) \Big/ 8192\Big\},$$

$$\left\{-\frac{\pi}{2} * 0.8, \left(\text{OneZeroSecond08ibmqbelem} + \text{ZeroZeroSecond08ibmqbelem}\right) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.6, \left(\text{OneZeroSecond06ibmqbelem} + \text{ZeroZeroSecond06ibmqbelem}\right) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.4, \left(\text{OneZeroSecond04ibmqbelem} + \text{ZeroZeroSecond04ibmqbelem}\right) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.2, \left(\text{OneZeroSecond02ibmqbelem} + \text{ZeroZeroSecond02ibmqbelem}\right) / 8192\right\},$$

$$\left\{-\frac{\pi}{2} * 0.0, \left(\text{OneZeroFirst00ibmqbelem} + \text{ZeroZeroFirst00ibmqbelem}\right) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.2, \left(\text{OneZeroFirst02ibmqbelem} + \text{ZeroZeroFirst02ibmqbelem}\right) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.4, \left(\text{OneZeroFirst04ibmqbelem} + \text{ZeroZeroFirst04ibmqbelem}\right) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.6, \left(\text{OneZeroFirst06ibmqbelem} + \text{ZeroZeroFirst06ibmqbelem}\right) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 0.8, \left(\text{OneZeroFirst08ibmqbelem} + \text{ZeroZeroFirst08ibmqbelem}\right) / 8192\right\},$$

$$\left\{\frac{\pi}{2} * 1.0, \left(\text{OneZeroFirst10ibmqbelem} + \text{ZeroZeroFirst10ibmqbelem}\right) / 8192\right\}\right\}$$

```
ExpCosSqibmqbelem = ListPlot[CosSqibmqbelem]
ExpDecisivenessibmqbelem = ListPlot[Decisivenessibmqbelem]
```

Out[●]= 7356

Out[●]= 231

Out[●]= 270

Out[●]= 335

Out[●]= 7119

Out[●]= 230

Out[●]= 291

Out[●]= 552

Out[●]= 6478

Out[●]= 266

Out[●]= 320

Out[●]= 1128

Out[●]= 5760

Out[●]= 342

Out[●]= 372

Out[●]= 1718

Out[●]= 4763

Out[ ]= 355

Out[ ]= 472

Out[ ]= 2602

Out[ ]= 3642

Out[ ]= 345

Out[ ]= 676

Out[ ]= 3529

Out[ ]= 2567

Out[ ]= 438

Out[ ]= 783

Out[ ]= 4404

Out[ ]= 1614

Out[ ]= 422

Out[ ]= 889

Out[ ]= 5267

Out[ ]= 893

Out[ ]= 396

Out[ ]= 926

Out[ ]= 5977

Out[ ]= 487

Out[ ]= 440

Out[ ]= 1080

Out[ ]= 6185

Out[ ]= 320

Out[ ]= 471

Out[ ]= 1056

Out[ ]= 6345

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, \frac{10}{43}\right\}, \left\{-1.25664, \frac{487}{1567}\right\}, \left\{-0.942478, \frac{893}{1819}\right\},\right.$
$\left\{-0.628319, \frac{1614}{2503}\right\}, \left\{-0.314159, \frac{2567}{3350}\right\}, \left\{0., \frac{1821}{2159}\right\}, \left\{0.314159, \frac{4763}{5235}\right\},$
$\left.\left\{0.628319, \frac{480}{511}\right\}, \left\{0.942478, \frac{3239}{3399}\right\}, \left\{1.25664, \frac{2373}{2470}\right\}, \left\{\frac{\pi}{2}, \frac{1226}{1271}\right\}\right\}$

Out[•]= $\left\{\left\{-\frac{\pi}{2}, \frac{43}{256}\right\}, \left\{-1.25664, \frac{1567}{8192}\right\}, \left\{-0.942478, \frac{1819}{8192}\right\},\right.$

$\left\{-0.628319, \frac{2503}{8192}\right\}, \left\{-0.314159, \frac{1675}{4096}\right\}, \left\{0., \frac{2159}{4096}\right\}, \left\{0.314159, \frac{5235}{8192}\right\},$

$\left.\left\{0.628319, \frac{1533}{2048}\right\}, \left\{0.942478, \frac{3399}{4096}\right\}, \left\{1.25664, \frac{3705}{4096}\right\}, \left\{1.5708, \frac{3813}{4096}\right\}\right\}$

Out[•]=

Out[•]=
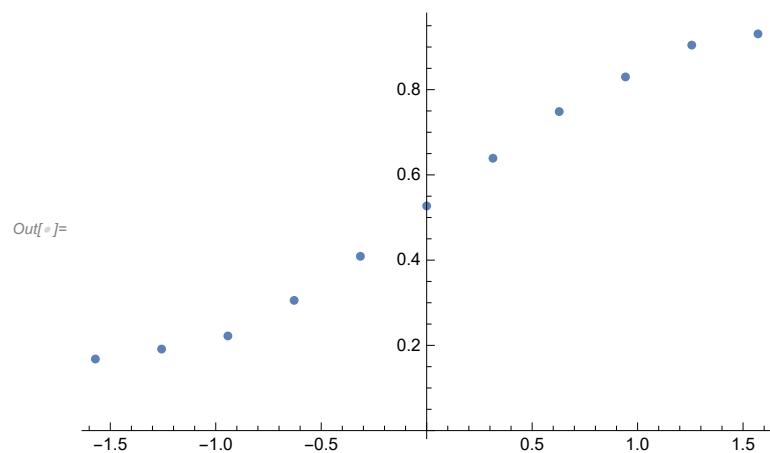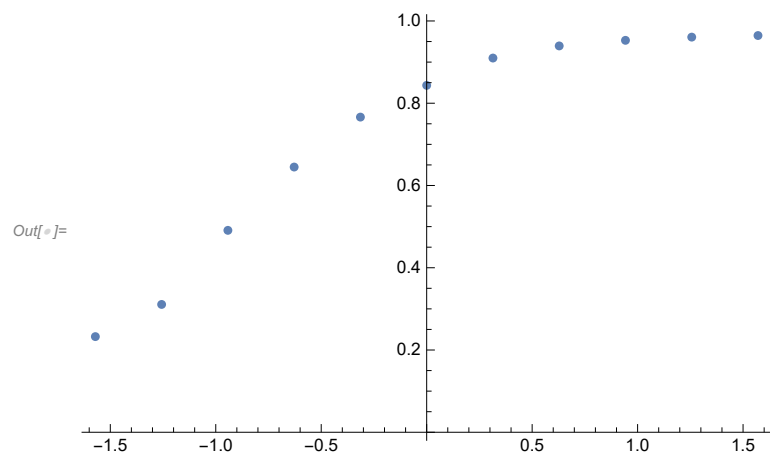
In[•]:= **Show[cosTH, ExpCosSqibmqbelem]**

Out[•]=

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

Out[ ]=
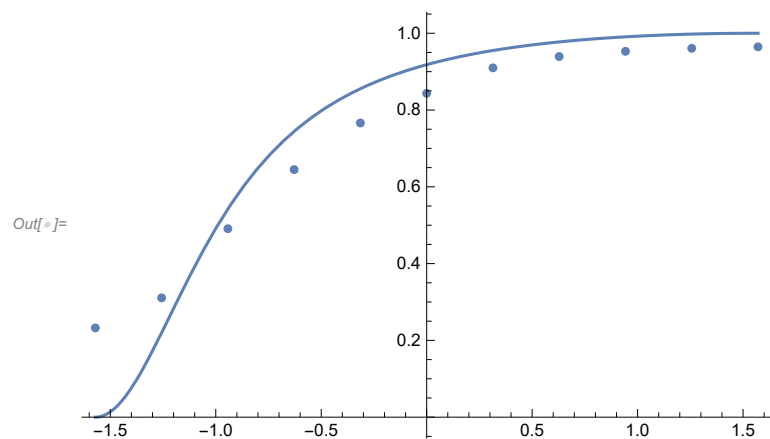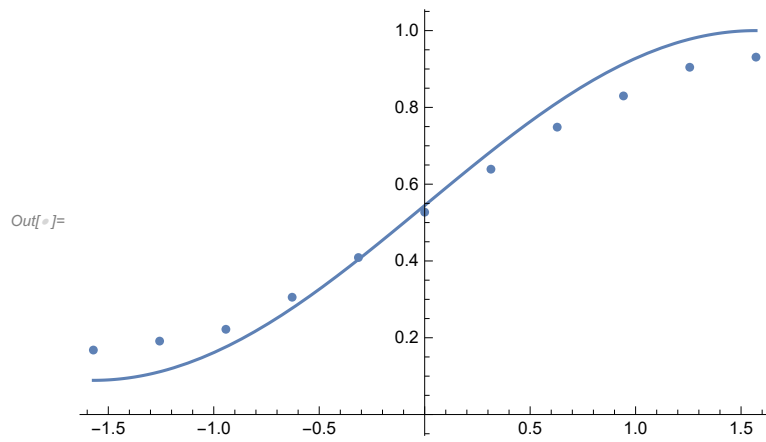
In[ ]:= **Subscript[Cos², $\mathscr{PT}$]**

Out[ ]= $\text{Cos}^2{}_{\mathscr{PT}}$

```
In[•]:= CosSqExperiment =
    ListPlot[{CosSqibmperth, CosSqibmqjakarta, CosSqibmlagos, CosSqibmnairobi, CosSqibmoslo,
      CosSqibmqmanila, CosSqibmqquito, CosSqibmqbelem, CosSqibmqlima, CosSqsimulatormps,
      CosSqsimulatorextendedstabilizer, CosSqibmqqasmsimulator, CosSqsimulatorstatevector},
     PlotStyle → {Directive[Darker[Blue], Thickness[0.007]],
       Directive[Darker[Red], Dashing[0.02], Thickness[0.007]],
       Directive[Darker[Green], Thickness[0.005], Dotted],
       Directive[Darker[Orange], Thickness[0.007], Dashed], Directive[Darker[Black],
        Thickness[0.003]], Directive[Cross, Darker[Purple], Thickness[0.003]]},
     Frame → True, FrameStyle → Directive[Black, Thick], Frame → True,
     FrameStyle → Directive[Black, Thick], LabelStyle → Large,
     PlotStyle → {Directive[Darker[Green], Thickness[0.007]]},
     FrameLabel → {{"Cos²PT(|χ₁⟩,|χ₃⟩)",}, {"ρ ∈ [-π/2,π/2]", ""}},
     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}}]
```

Out[•]=

In[ ]:= **CosSqTheory = Plot[cos13F[π/2 - 1, π/2, x], {x, -π/2, π/2},**
**   PlotRange → All, PlotStyle → {Directive[Darker[Blue], Thickness[0.003]]},**
**   Frame → True, FrameStyle → Directive[Black, Thick], Frame → True,**
**   FrameStyle → Directive[Black, Thick], LabelStyle → Large,**
**   PlotStyle → {Directive[Darker[Green], Thickness[0.007]]},**
**   FrameLabel → {{"Cos²$_{\mathcal{PT}}$(|χ₁⟩, |χ₃⟩) [ρ]",}, {"ρ ∈ [-$\frac{π}{2}$, $\frac{π}{2}$]", ""}},**
**   LabelStyle → {FontWeight → "Bold", FontSize → 25},**
**   ImageSize → 650, GridLinesStyle → Directive[Thick, Gray]]**

Out[ ]=
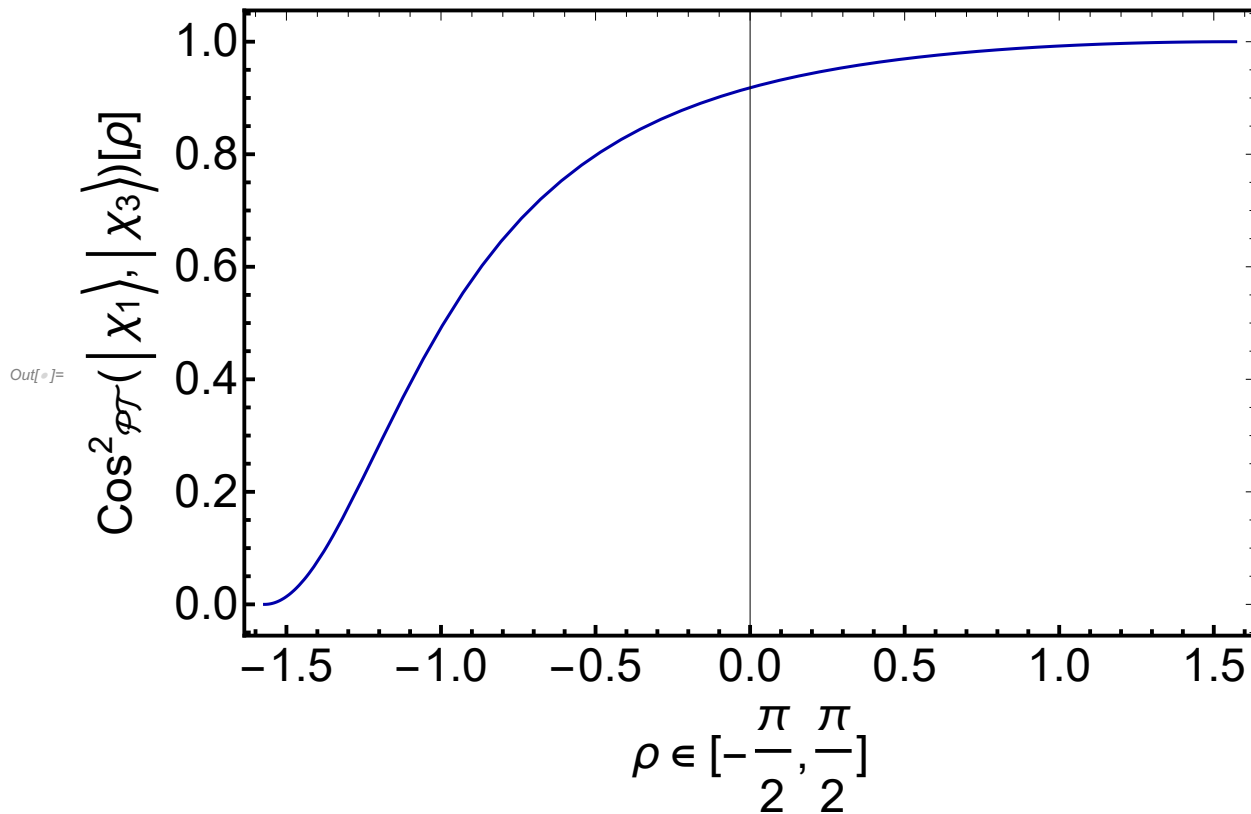
In[ ]:= **p1 = Show[CosSqTheory, CosSqExperiment]**

Out[ ]=
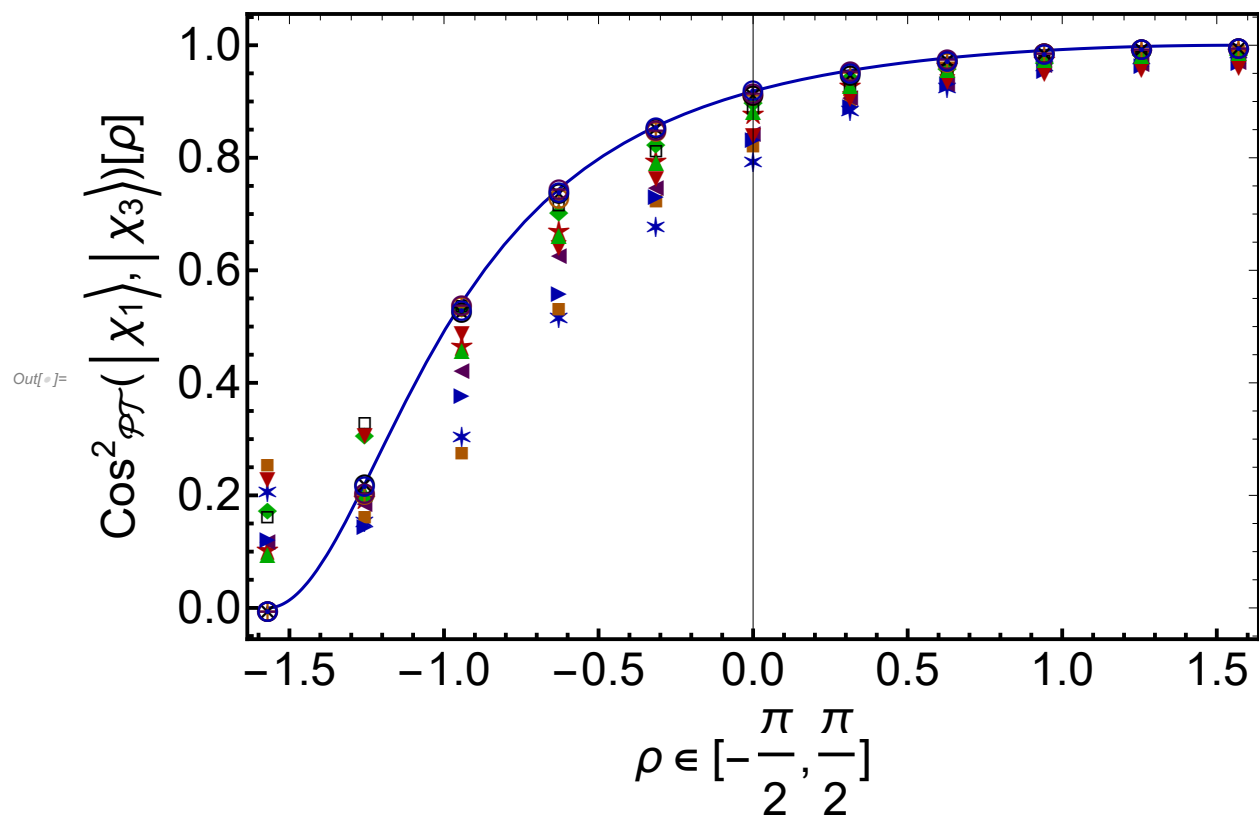
In[⬤]:= `DecisivenessTheory = Plot[DecisiveProbability[M10, π/2 - 1, π/2, x], {x, -π/2, π/2},`
`    PlotRange → All, PlotStyle → {Directive[Darker[Red], Dashing[0.02], Thickness[0.003]]},`
`    Frame → True, FrameStyle → Directive[Black, Thick], Frame → True,`
`    FrameStyle → Directive[Black, Thick], LabelStyle → Large,`
`    PlotStyle → {Directive[Darker[Green], Thickness[0.007]]},`
`    FrameLabel →` $\left\{\left\{\text{"}\dfrac{\langle\psi_{\mathcal{PT}} \mid \psi_{\mathcal{PT}}\rangle}{\langle\psi_{\mathcal{PT}} \mid \psi_{\mathcal{PT}}\rangle + \langle\psi_{\mathcal{PT}} \mid \xi^2 \mid \psi_{\mathcal{PT}}\rangle}\text{"},\right\}, \left\{\text{"}\rho \in [-\dfrac{\pi}{2}, \dfrac{\pi}{2}]\text{"}, \text{""}\right\}\right\},$
`    LabelStyle → {FontWeight → "Bold", FontSize → 25},`
`    ImageSize → 650, GridLinesStyle → Directive[Thick, Gray]]`

Out[⬤]=

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[Red], Dashing[0.02], Thickness[0.007]],`
`     Directive[Darker[Green], Thickness[0.005], Dotted], Directive[Darker[Orange],`
`       Thickness[0.007], Dashed], Directive[Darker[Black], Thickness[0.003]],`
`     Directive[Cross, Darker[Purple], Thickness[0.003]]}, Frame → True,`
`   FrameStyle → Directive[Black, Thick], 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]]},`

$$\text{FrameLabel} \rightarrow \left\{ \left\{ \text{"} \frac{\langle \psi_{\mathcal{PT}} \mid \psi_{\mathcal{PT}} \rangle}{\langle \psi_{\mathcal{PT}} \mid \psi_{\mathcal{PT}} \rangle + \langle \psi_{\mathcal{PT}} \mid \xi^2 \mid \psi_{\mathcal{PT}} \rangle} \text{"}, \right\}, \left\{ \text{"} \rho \in \left[-\frac{\pi}{2}, \frac{\pi}{2} \right] \text{"}, \text{""} \right\} \right\},$$

`   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}}]`
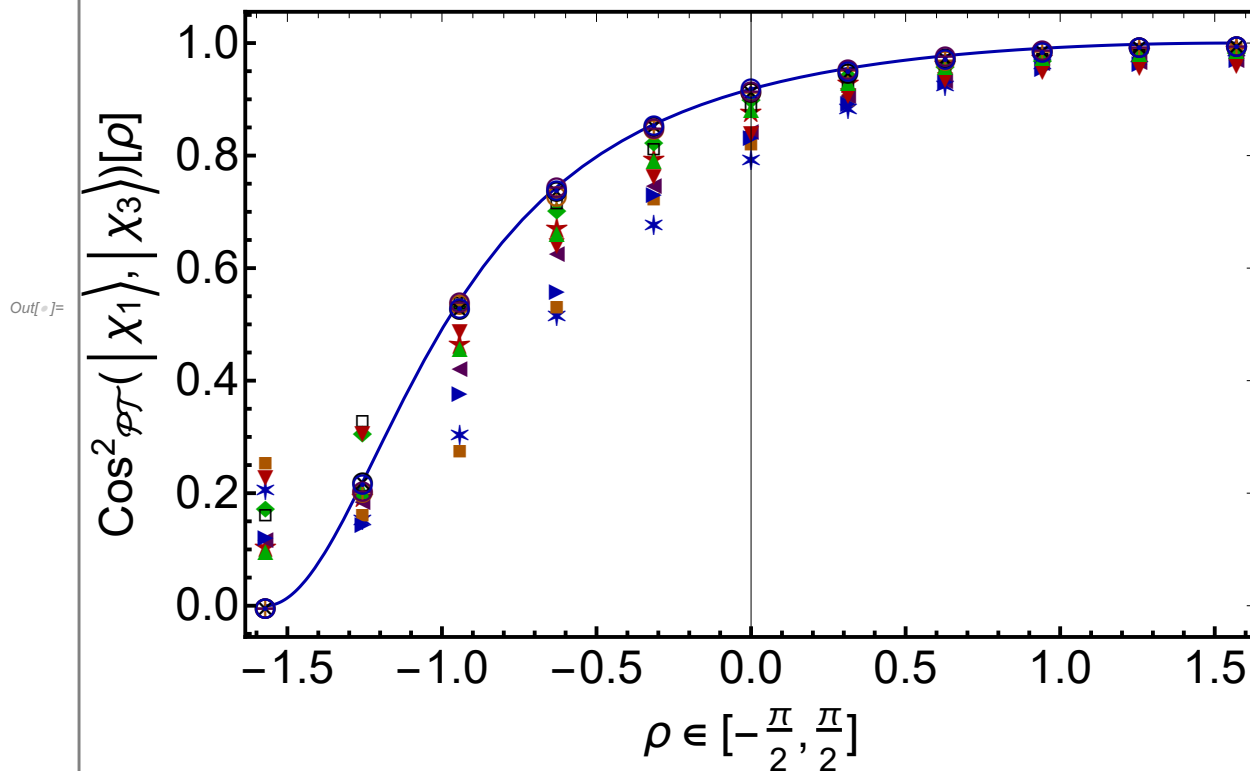
Out[ ]=

In[ ]:= **p2 = Show[DecisivenessExperiment, DecisivenessTheory]**

Out[ ]=
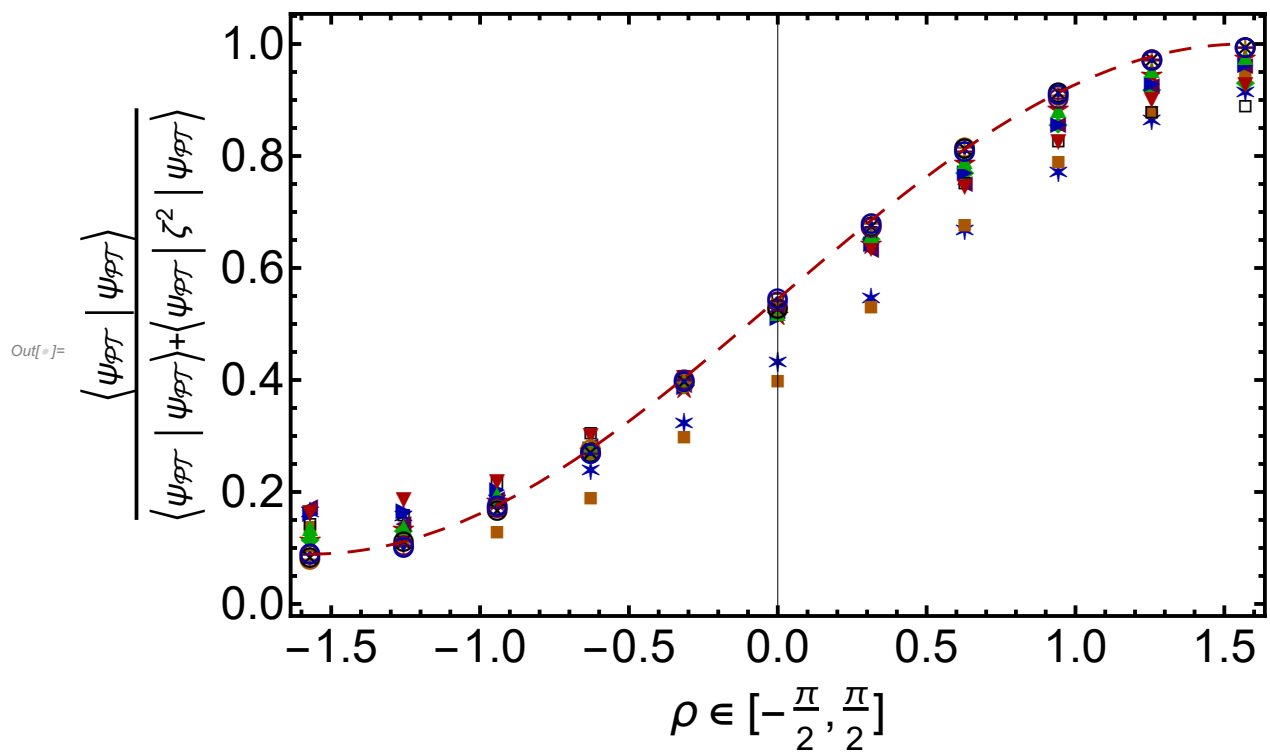
In[ ]:= `title = Panel[Style["Second stage, ` $\alpha = \frac{\pi}{2} - 1$`, ` $\mathcal{N}(0) \approx \mathcal{N}_{min}$`", White, 20],`

`ImageSize → 500, Background → Blue, Alignment → Center];`

`DependenceVariation = Deploy@Grid[{{title, SpanFromLeft}, {p1, p2}},`

`Dividers → Gray, Spacings → {0, 0}]`

Out[ ]=

In[ ]:= `Export["M10Exp_8_12_2023.png", DependenceVariation, ImageSize → 10 000]`

Out[ ]= `M10Exp_8_12_2023.png`

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

`ZeroZeroFirst10ibmperth = 7407`

`ZeroOneFirst10ibmperth = 297`

`OneZeroFirst10ibmperth = 93`

`OneOneFirst10ibmperth = 395`

`ZeroZeroFirst08ibmperth = 6916`

`ZeroOneFirst08ibmperth = 278`

`OneZeroFirst08ibmperth = 168`

`OneOneFirst08ibmperth = 830`

`ZeroZeroFirst06ibmperth = 6110`

`ZeroOneFirst06ibmperth = 377`

```
OneZeroFirst06ibmperth = 225
OneOneFirst06ibmperth = 1480

ZeroZeroFirst04ibmperth = 5069
ZeroOneFirst04ibmperth = 353
OneZeroFirst04ibmperth = 409
OneOneFirst04ibmperth = 2361

ZeroZeroFirst02ibmperth = 3963
ZeroOneFirst02ibmperth = 406
OneZeroFirst02ibmperth = 518
OneOneFirst02ibmperth = 3305

ZeroZeroFirst00ibmperth = 2810
ZeroOneFirst00ibmperth = 449
OneZeroFirst00ibmperth = 733
OneOneFirst00ibmperth = 4200

ZeroZeroSecond02ibmperth = 1805
ZeroOneSecond02ibmperth = 454
OneZeroSecond02ibmperth = 855
OneOneSecond02ibmperth = 5078

ZeroZeroSecond04ibmperth = 1019
ZeroOneSecond04ibmperth = 522
OneZeroSecond04ibmperth = 957
OneOneSecond04ibmperth = 5694

ZeroZeroSecond06ibmperth = 465
ZeroOneSecond06ibmperth = 492
OneZeroSecond06ibmperth = 1061
OneOneSecond06ibmperth = 6174

ZeroZeroSecond08ibmperth = 200
ZeroOneSecond08ibmperth = 420
OneZeroSecond08ibmperth = 1101
OneOneSecond08ibmperth = 6471

ZeroZeroSecond10ibmperth = 280
ZeroOneSecond10ibmperth = 425
OneZeroSecond10ibmperth = 1076
OneOneSecond10ibmperth = 6411
```

CosSqibmperth =

$\left\{\left\{-\frac{\pi}{2} * 1, \text{ZeroZeroSecond10ibmperth} \middle/ (\text{OneZeroSecond10ibmperth} + \text{ZeroZeroSecond10ibmperth})\right\},\right.$

$\left\{-\frac{\pi}{2} * 0.8, \text{ZeroZeroSecond08ibmperth} \middle/\right.$

$(\text{OneZeroSecond08ibmperth} + \text{ZeroZeroSecond08ibmperth})\right\}, \left\{-\frac{\pi}{2} * 0.6,\right.$

$\text{ZeroZeroSecond06ibmperth} \middle/ (\text{OneZeroSecond06ibmperth} + \text{ZeroZeroSecond06ibmperth})\right\},$

```
    {- π/2 * 0.4, ZeroZeroSecond04ibmperth /

      (OneZeroSecond04ibmperth + ZeroZeroSecond04ibmperth)}, {- π/2 * 0.2,

     ZeroZeroSecond02ibmperth / (OneZeroSecond02ibmperth + ZeroZeroSecond02ibmperth)},

    {π/2 * 0.0, ZeroZeroFirst00ibmperth / (OneZeroFirst00ibmperth + ZeroZeroFirst00ibmperth)},

    {π/2 * 0.2, ZeroZeroFirst02ibmperth / (OneZeroFirst02ibmperth + ZeroZeroFirst02ibmperth)},

    {π/2 * 0.4, ZeroZeroFirst04ibmperth / (OneZeroFirst04ibmperth + ZeroZeroFirst04ibmperth)},

    {π/2 * 0.6, ZeroZeroFirst06ibmperth / (OneZeroFirst06ibmperth + ZeroZeroFirst06ibmperth)},

    {π/2 * 0.8, ZeroZeroFirst08ibmperth / (OneZeroFirst08ibmperth + ZeroZeroFirst08ibmperth)},

    {π/2 * 1, ZeroZeroFirst10ibmperth / (OneZeroFirst10ibmperth + ZeroZeroFirst10ibmperth)}}
Decisivenessibmperth =
  {{- π/2 * 1, (OneZeroSecond10ibmperth + ZeroZeroSecond10ibmperth) / 8192},

   {- π/2 * 0.8, (OneZeroSecond08ibmperth + ZeroZeroSecond08ibmperth) / 8192},

   {- π/2 * 0.6, (OneZeroSecond06ibmperth + ZeroZeroSecond06ibmperth) / 8192},

   {- π/2 * 0.4, (OneZeroSecond04ibmperth + ZeroZeroSecond04ibmperth) / 8192},

   {- π/2 * 0.2, (OneZeroSecond02ibmperth + ZeroZeroSecond02ibmperth) / 8192},

   {- π/2 * 0.0, (OneZeroFirst00ibmperth + ZeroZeroFirst00ibmperth) / 8192},

   {π/2 * 0.2, (OneZeroFirst02ibmperth + ZeroZeroFirst02ibmperth) / 8192},

   {π/2 * 0.4, (OneZeroFirst04ibmperth + ZeroZeroFirst04ibmperth) / 8192},

   {π/2 * 0.6, (OneZeroFirst06ibmperth + ZeroZeroFirst06ibmperth) / 8192},

   {π/2 * 0.8, (OneZeroFirst08ibmperth + ZeroZeroFirst08ibmperth) / 8192},

   {π/2 * 1.0, (OneZeroFirst10ibmperth + ZeroZeroFirst10ibmperth) / 8192}}
ExpCosSqibmperth = ListPlot[CosSqibmperth]
ExpDecisivenessibmperth = ListPlot[Decisivenessibmperth]
Show[cosTH, ExpCosSqibmperth]
Show[decTH, ExpDecisivenessibmperth]
```

Out[●]= 7407

Out[●]= 297

Out[●]= 93

Out[●]= 395

Out[•]= 6916

Out[•]= 278

Out[•]= 168

Out[•]= 830

Out[•]= 6110

Out[•]= 377

Out[•]= 225

Out[•]= 1480

Out[•]= 5069

Out[•]= 353

Out[•]= 409

Out[•]= 2361

Out[•]= 3963

Out[•]= 406

Out[•]= 518

Out[•]= 3305

Out[•]= 2810

Out[•]= 449

Out[•]= 733

Out[•]= 4200

Out[•]= 1805

Out[•]= 454

Out[•]= 855

Out[•]= 5078

Out[•]= 1019

Out[•]= 522

Out[•]= 957

Out[•]= 5694

Out[•]= 465

Out[•]= 492

Out[•]= 1061

Out[●]= 6174

Out[●]= 200

Out[●]= 420

Out[●]= 1101

Out[●]= 6471

Out[●]= 280

Out[●]= 425

Out[●]= 1076

Out[●]= 6411

Out[●]= $\left\{\left\{-\dfrac{\pi}{2}, \dfrac{70}{339}\right\}, \left\{-1.25664, \dfrac{200}{1301}\right\}, \left\{-0.942478, \dfrac{465}{1526}\right\},\right.$
$\left\{-0.628319, \dfrac{1019}{1976}\right\}, \left\{-0.314159, \dfrac{19}{28}\right\}, \left\{0., \dfrac{2810}{3543}\right\}, \left\{0.314159, \dfrac{3963}{4481}\right\},$
$\left.\left\{0.628319, \dfrac{5069}{5478}\right\}, \left\{0.942478, \dfrac{1222}{1267}\right\}, \left\{1.25664, \dfrac{247}{253}\right\}, \left\{\dfrac{\pi}{2}, \dfrac{2469}{2500}\right\}\right\}$

Out[●]= $\left\{\left\{-\dfrac{\pi}{2}, \dfrac{339}{2048}\right\}, \left\{-1.25664, \dfrac{1301}{8192}\right\}, \left\{-0.942478, \dfrac{763}{4096}\right\},\right.$
$\left\{-0.628319, \dfrac{247}{1024}\right\}, \left\{-0.314159, \dfrac{665}{2048}\right\}, \left\{0., \dfrac{3543}{8192}\right\}, \left\{0.314159, \dfrac{4481}{8192}\right\},$
$\left.\left\{0.628319, \dfrac{2739}{4096}\right\}, \left\{0.942478, \dfrac{6335}{8192}\right\}, \left\{1.25664, \dfrac{1771}{2048}\right\}, \left\{1.5708, \dfrac{1875}{2048}\right\}\right\}$

Out[●]=

Out[●]=

Out[●]=

Out[●]=
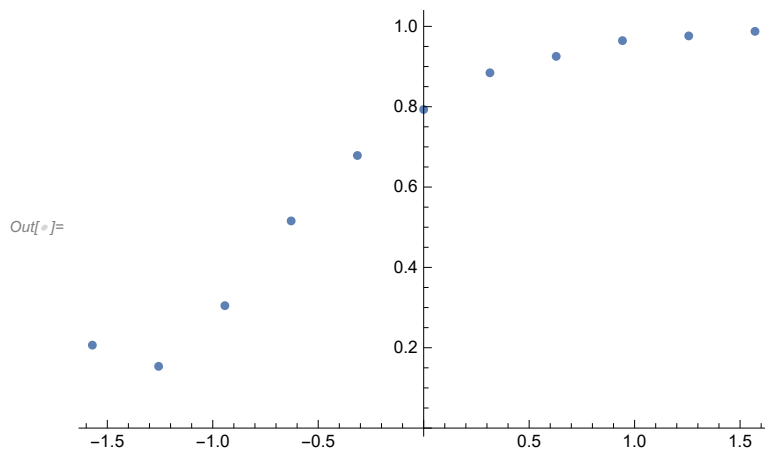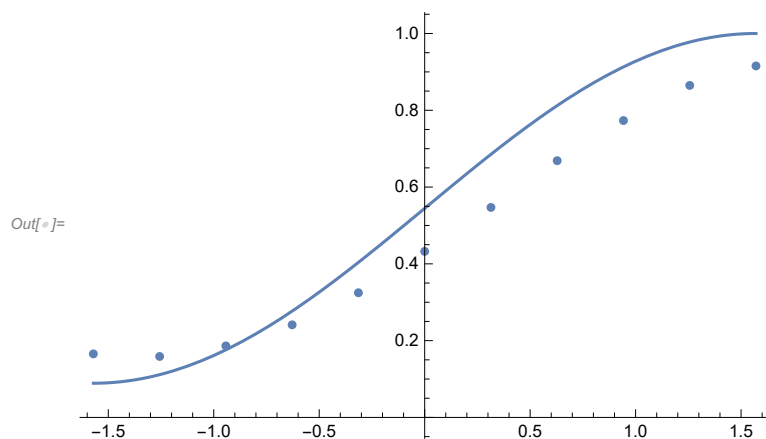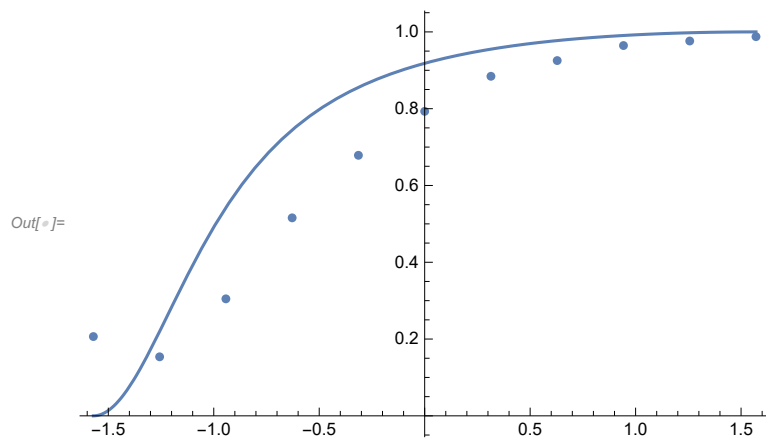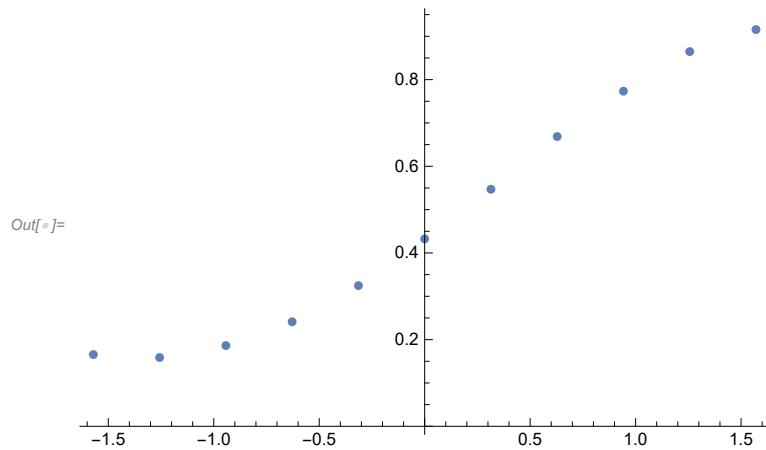
In[●]:= **(*ibmq_jakarta*)**
ZeroZeroFirst10ibmqjakarta = 7923
ZeroOneFirst10ibmqjakarta = 109
OneZeroFirst10ibmqjakarta = 80
OneOneFirst10ibmqjakarta = 80

ZeroZeroFirst08ibmqjakarta = 7650
ZeroOneFirst08ibmqjakarta = 129
OneZeroFirst08ibmqjakarta = 96
OneOneFirst08ibmqjakarta = 317

```
ZeroZeroFirst06ibmqjakarta = 7067
ZeroOneFirst06ibmqjakarta = 120
OneZeroFirst06ibmqjakarta = 178
OneOneFirst06ibmqjakarta = 827

ZeroZeroFirst04ibmqjakarta = 6218
ZeroOneFirst04ibmqjakarta = 167
OneZeroFirst04ibmqjakarta = 236
OneOneFirst04ibmqjakarta = 1571

ZeroZeroFirst02ibmqjakarta = 4907
ZeroOneFirst02ibmqjakarta = 175
OneZeroFirst02ibmqjakarta = 373
OneOneFirst02ibmqjakarta = 2737

ZeroZeroFirst00ibmqjakarta = 3724
ZeroOneFirst00ibmqjakarta = 205
OneZeroFirst00ibmqjakarta = 513
OneOneFirst00ibmqjakarta = 3750

ZeroZeroSecond02ibmqjakarta = 2526
ZeroOneSecond02ibmqjakarta = 248
OneZeroSecond02ibmqjakarta = 648
OneOneSecond02ibmqjakarta = 4770

ZeroZeroSecond04ibmqjakarta = 1512
ZeroOneSecond04ibmqjakarta = 288
OneZeroSecond04ibmqjakarta = 739
OneOneSecond04ibmqjakarta = 5653

ZeroZeroSecond06ibmqjakarta = 709
ZeroOneSecond06ibmqjakarta = 297
OneZeroSecond06ibmqjakarta = 812
OneOneSecond06ibmqjakarta = 6374

ZeroZeroSecond08ibmqjakarta = 215
ZeroOneSecond08ibmqjakarta = 284
OneZeroSecond08ibmqjakarta = 887
OneOneSecond08ibmqjakarta = 6806

ZeroZeroSecond10ibmqjakarta = 99
ZeroOneSecond10ibmqjakarta = 297
OneZeroSecond10ibmqjakarta = 845
OneOneSecond10ibmqjakarta = 6951
```

$$\text{CosSqibmqjakarta} = \left\{ \left\{ -\frac{\pi}{2} * 1, \text{ZeroZeroSecond10ibmqjakarta} \middle/ \right.\right.$$
$$\left. \left(\text{OneZeroSecond10ibmqjakarta} + \text{ZeroZeroSecond10ibmqjakarta}\right) \right\},$$
$$\left\{ -\frac{\pi}{2} * 0.8, \text{ZeroZeroSecond08ibmqjakarta} \middle/ \right.$$

```
          (OneZeroSecond08ibmqjakarta + ZeroZeroSecond08ibmqjakarta)},
     π
   {- ─ * 0.6, ZeroZeroSecond06ibmqjakarta /
     2
          (OneZeroSecond06ibmqjakarta + ZeroZeroSecond06ibmqjakarta)},
     π
   {- ─ * 0.4, ZeroZeroSecond04ibmqjakarta /
     2
          (OneZeroSecond04ibmqjakarta + ZeroZeroSecond04ibmqjakarta)},
     π
   {- ─ * 0.2, ZeroZeroSecond02ibmqjakarta /
     2
                                                                π
          (OneZeroSecond02ibmqjakarta + ZeroZeroSecond02ibmqjakarta)}, {─ * 0.0,
                                                                2
    ZeroZeroFirst00ibmqjakarta / (OneZeroFirst00ibmqjakarta + ZeroZeroFirst00ibmqjakarta)},
    π
   {─ * 0.2, ZeroZeroFirst02ibmqjakarta /
    2
                                                                π
          (OneZeroFirst02ibmqjakarta + ZeroZeroFirst02ibmqjakarta)}, {─ * 0.4,
                                                                2
    ZeroZeroFirst04ibmqjakarta / (OneZeroFirst04ibmqjakarta + ZeroZeroFirst04ibmqjakarta)},
    π
   {─ * 0.6, ZeroZeroFirst06ibmqjakarta /
    2
                                                                π
          (OneZeroFirst06ibmqjakarta + ZeroZeroFirst06ibmqjakarta)}, {─ * 0.8,
                                                                2
    ZeroZeroFirst08ibmqjakarta / (OneZeroFirst08ibmqjakarta + ZeroZeroFirst08ibmqjakarta)},
    π
   {─ * 1, ZeroZeroFirst10ibmqjakarta /
    2
          (OneZeroFirst10ibmqjakarta + ZeroZeroFirst10ibmqjakarta)}}
                                 π
Decisivenessibmqjakarta = {{- ─ * 1,
                                 2
    (OneZeroSecond10ibmqjakarta + ZeroZeroSecond10ibmqjakarta) / 8192},
     π
   {- ─ * 0.8, (OneZeroSecond08ibmqjakarta + ZeroZeroSecond08ibmqjakarta) / 8192},
     2
     π
   {- ─ * 0.6, (OneZeroSecond06ibmqjakarta + ZeroZeroSecond06ibmqjakarta) / 8192},
     2
     π
   {- ─ * 0.4, (OneZeroSecond04ibmqjakarta + ZeroZeroSecond04ibmqjakarta) / 8192},
     2
     π
   {- ─ * 0.2, (OneZeroSecond02ibmqjakarta + ZeroZeroSecond02ibmqjakarta) / 8192},
     2
     π
   {- ─ * 0.0, (OneZeroFirst00ibmqjakarta + ZeroZeroFirst00ibmqjakarta) / 8192},
     2
    π
   {─ * 0.2, (OneZeroFirst02ibmqjakarta + ZeroZeroFirst02ibmqjakarta) / 8192},
    2
    π
   {─ * 0.4, (OneZeroFirst04ibmqjakarta + ZeroZeroFirst04ibmqjakarta) / 8192},
    2
    π
   {─ * 0.6, (OneZeroFirst06ibmqjakarta + ZeroZeroFirst06ibmqjakarta) / 8192},
    2
    π
   {─ * 0.8, (OneZeroFirst08ibmqjakarta + ZeroZeroFirst08ibmqjakarta) / 8192},
    2
    π
   {─ * 1.0, (OneZeroFirst10ibmqjakarta + ZeroZeroFirst10ibmqjakarta) / 8192}}
    2
ExpCosSqibmqjakarta = ListPlot[CosSqibmqjakarta]
ExpDecisivenessibmqjakarta = ListPlot[Decisivenessibmqjakarta]
Show[cosTH, ExpCosSqibmqjakarta]
```

Show[decTH, ExpDecisivenessibmqjakarta]

Out[●]= 7923

Out[●]= 109

Out[●]= 80

Out[●]= 80

Out[●]= 7650

Out[●]= 129

Out[●]= 96

Out[●]= 317

Out[●]= 7067

Out[●]= 120

Out[●]= 178

Out[●]= 827

Out[●]= 6218

Out[●]= 167

Out[●]= 236

Out[●]= 1571

Out[●]= 4907

Out[●]= 175

Out[●]= 373

Out[●]= 2737

Out[●]= 3724

Out[●]= 205

Out[●]= 513

Out[●]= 3750

Out[●]= 2526

Out[●]= 248

Out[●]= 648

Out[●]= 4770

Out[●]= 1512

Out[●]= 288

Out[ ]= 739

Out[ ]= 5653

Out[ ]= 709

Out[ ]= 297

Out[ ]= 812

Out[ ]= 6374

Out[ ]= 215

Out[ ]= 284

Out[ ]= 887

Out[ ]= 6806

Out[ ]= 99

Out[ ]= 297

Out[ ]= 845

Out[ ]= 6951

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, \frac{99}{944}\right\}, \left\{-1.25664, \frac{215}{1102}\right\}, \left\{-0.942478, \frac{709}{1521}\right\},\right.$
$\left\{-0.628319, \frac{1512}{2251}\right\}, \left\{-0.314159, \frac{421}{529}\right\}, \left\{0., \frac{196}{223}\right\}, \left\{0.314159, \frac{4907}{5280}\right\},$
$\left.\left\{0.628319, \frac{3109}{3227}\right\}, \left\{0.942478, \frac{7067}{7245}\right\}, \left\{1.25664, \frac{1275}{1291}\right\}, \left\{\frac{\pi}{2}, \frac{7923}{8003}\right\}\right\}$

Out[ ]= $\left\{\left\{-\frac{\pi}{2}, \frac{59}{512}\right\}, \left\{-1.25664, \frac{551}{4096}\right\}, \left\{-0.942478, \frac{1521}{8192}\right\},\right.$
$\left\{-0.628319, \frac{2251}{8192}\right\}, \left\{-0.314159, \frac{1587}{4096}\right\}, \left\{0., \frac{4237}{8192}\right\}, \left\{0.314159, \frac{165}{256}\right\},$
$\left.\left\{0.628319, \frac{3227}{4096}\right\}, \left\{0.942478, \frac{7245}{8192}\right\}, \left\{1.25664, \frac{3873}{4096}\right\}, \left\{1.5708, \frac{8003}{8192}\right\}\right\}$

Out[ ]=

Out[•]=

Out[•]=

Out[•]=
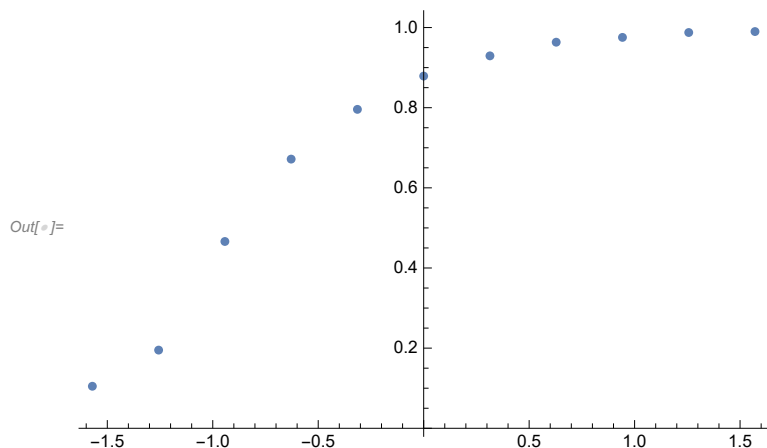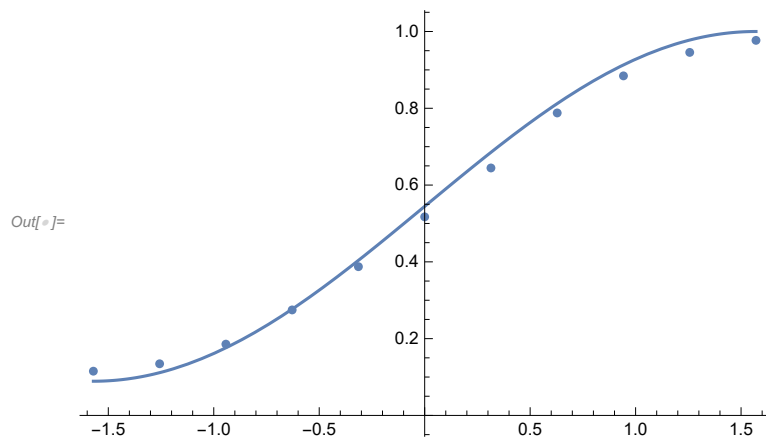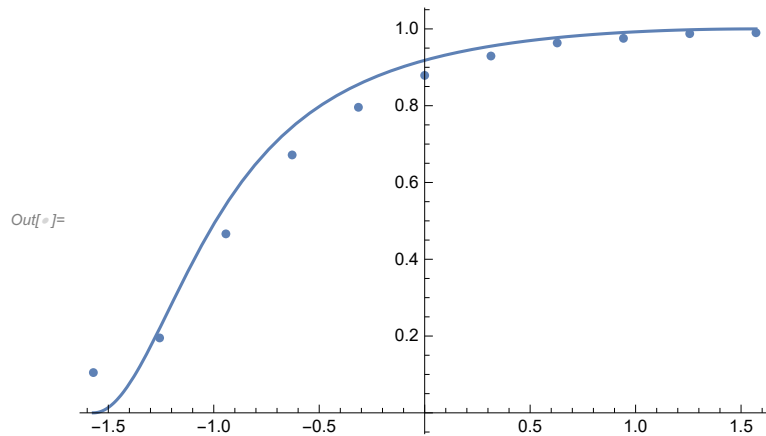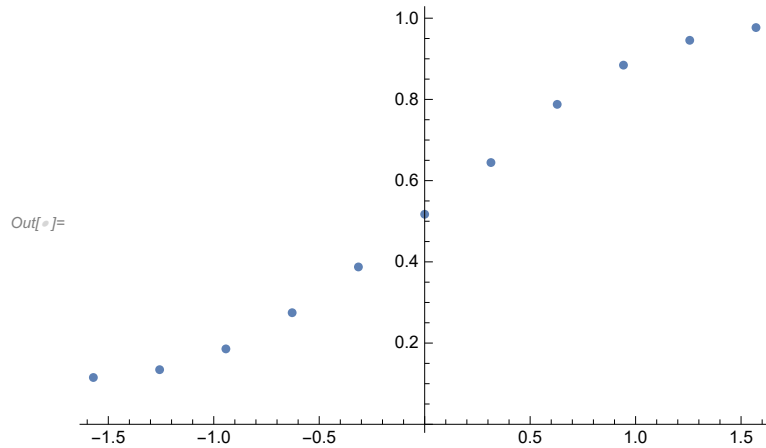
In[•]:= **(*ibm_lagos*)**
ZeroZeroSecond10ibmlagos = 172
ZeroOneSecond10ibmlagos = 114
OneZeroSecond10ibmlagos = 804
OneOneSecond10ibmlagos = 7102

ZeroZeroSecond08ibmlagos = 341
ZeroOneSecond08ibmlagos = 145
OneZeroSecond08ibmlagos = 760
OneOneSecond08ibmlagos = 6946

```
ZeroZeroSecond06ibmlagos = 828
ZeroOneSecond06ibmlagos = 125
OneZeroSecond06ibmlagos = 715
OneOneSecond06ibmlagos = 6524

ZeroZeroSecond04ibmlagos = 1551
ZeroOneSecond04ibmlagos = 219
OneZeroSecond04ibmlagos = 646
OneOneSecond04ibmlagos = 5776

ZeroZeroSecond02ibmlagos = 2667
ZeroOneSecond02ibmlagos = 173
OneZeroSecond02ibmlagos = 554
OneOneSecond02ibmlagos = 4798

ZeroZeroFirst00ibmlagos = 3862
ZeroOneFirst00ibmlagos = 178
OneZeroFirst00ibmlagos = 416
OneOneFirst00ibmlagos = 3736

ZeroZeroFirst02ibmlagos = 5089
ZeroOneFirst02ibmlagos = 175
OneZeroFirst02ibmlagos = 291
OneOneFirst02ibmlagos = 2637

ZeroZeroFirst04ibmlagos = 6109
ZeroOneFirst04ibmlagos = 187
OneZeroFirst04ibmlagos = 236
OneOneFirst04ibmlagos = 1660

ZeroZeroFirst06ibmlagos = 6864
ZeroOneFirst06ibmlagos = 233
OneZeroFirst06ibmlagos = 187
OneOneFirst06ibmlagos = 908

ZeroZeroFirst08ibmlagos = 7458
ZeroOneFirst08ibmlagos = 269
OneZeroFirst08ibmlagos = 93
OneOneFirst08ibmlagos = 372

ZeroZeroFirst10ibmlagos = 7554
ZeroOneFirst10ibmlagos = 326
OneZeroFirst10ibmlagos = 102
OneOneFirst10ibmlagos = 210
```

CosSqibmlagos =
$$\left\{\left\{-\frac{\pi}{2}*1,\ \text{ZeroZeroSecond10ibmlagos}\ /\ (\text{OneZeroSecond10ibmlagos}+\text{ZeroZeroSecond10ibmlagos})\right\},\right.$$
$$\left\{-\frac{\pi}{2}*0.8,\ \text{ZeroZeroSecond08ibmlagos}\ /\right.$$

```mathematica
      (OneZeroSecond08ibmlagos + ZeroZeroSecond08ibmlagos)}, {- π/2 * 0.6,
    ZeroZeroSecond06ibmlagos / (OneZeroSecond06ibmlagos + ZeroZeroSecond06ibmlagos)},
   {- π/2 * 0.4, ZeroZeroSecond04ibmlagos /
      (OneZeroSecond04ibmlagos + ZeroZeroSecond04ibmlagos)}, {- π/2 * 0.2,
    ZeroZeroSecond02ibmlagos / (OneZeroSecond02ibmlagos + ZeroZeroSecond02ibmlagos)},
   {π/2 * 0.0, ZeroZeroFirst00ibmlagos / (OneZeroFirst00ibmlagos + ZeroZeroFirst00ibmlagos)},
   {π/2 * 0.2, ZeroZeroFirst02ibmlagos / (OneZeroFirst02ibmlagos + ZeroZeroFirst02ibmlagos)},
   {π/2 * 0.4, ZeroZeroFirst04ibmlagos / (OneZeroFirst04ibmlagos + ZeroZeroFirst04ibmlagos)},
   {π/2 * 0.6, ZeroZeroFirst06ibmlagos / (OneZeroFirst06ibmlagos + ZeroZeroFirst06ibmlagos)},
   {π/2 * 0.8, ZeroZeroFirst08ibmlagos / (OneZeroFirst08ibmlagos + ZeroZeroFirst08ibmlagos)},
   {π/2 * 1, ZeroZeroFirst10ibmlagos / (OneZeroFirst10ibmlagos + ZeroZeroFirst10ibmlagos)}}
Decisivenessibmlagos =
  {{- π/2 * 1, (OneZeroSecond10ibmlagos + ZeroZeroSecond10ibmlagos) / 8192},
   {- π/2 * 0.8, (OneZeroSecond08ibmlagos + ZeroZeroSecond08ibmlagos) / 8192},
   {- π/2 * 0.6, (OneZeroSecond06ibmlagos + ZeroZeroSecond06ibmlagos) / 8192},
   {- π/2 * 0.4, (OneZeroSecond04ibmlagos + ZeroZeroSecond04ibmlagos) / 8192},
   {- π/2 * 0.2, (OneZeroSecond02ibmlagos + ZeroZeroSecond02ibmlagos) / 8192},
   {- π/2 * 0.0, (OneZeroFirst00ibmlagos + ZeroZeroFirst00ibmlagos) / 8192},
   {π/2 * 0.2, (OneZeroFirst02ibmlagos + ZeroZeroFirst02ibmlagos) / 8192},
   {π/2 * 0.4, (OneZeroFirst04ibmlagos + ZeroZeroFirst04ibmlagos) / 8192},
   {π/2 * 0.6, (OneZeroFirst06ibmlagos + ZeroZeroFirst06ibmlagos) / 8192},
   {π/2 * 0.8, (OneZeroFirst08ibmlagos + ZeroZeroFirst08ibmlagos) / 8192},
   {π/2 * 1.0, (OneZeroFirst10ibmlagos + ZeroZeroFirst10ibmlagos) / 8192}}
ExpCosSqibmlagos = ListPlot[CosSqibmlagos]
ExpDecisivenessibmlagos = ListPlot[Decisivenessibmlagos]
Show[cosTH, ExpCosSqibmlagos, PlotRange → All]
Show[decTH, ExpDecisivenessibmlagos]
```

Out[ ]= 172

Out[ ]= 114

Out[●]= 804

Out[●]= 7102

Out[●]= 341

Out[●]= 145

Out[●]= 760

Out[●]= 6946

Out[●]= 828

Out[●]= 125

Out[●]= 715

Out[●]= 6524

Out[●]= 1551

Out[●]= 219

Out[●]= 646

Out[●]= 5776

Out[●]= 2667

Out[●]= 173

Out[●]= 554

Out[●]= 4798

Out[●]= 3862

Out[●]= 178

Out[●]= 416

Out[●]= 3736

Out[●]= 5089

Out[●]= 175

Out[●]= 291

Out[●]= 2637

Out[●]= 6109

Out[●]= 187

Out[●]= 236

Out[●]= 1660

Out[●]= 6864

Out[●]= 233

Out[●]= 187

Out[●]= 908

Out[●]= 7458

Out[●]= 269

Out[●]= 93

Out[●]= 372

Out[●]= 7554

Out[●]= 326

Out[●]= 102

Out[●]= 210

Out[●]= $\left\{ \left\{ -\frac{\pi}{2}, \frac{43}{244} \right\}, \left\{ -1.25664, \frac{341}{1101} \right\}, \left\{ -0.942478, \frac{828}{1543} \right\}, \right.$
$\left\{ -0.628319, \frac{1551}{2197} \right\}, \left\{ -0.314159, \frac{2667}{3221} \right\}, \left\{ 0., \frac{1931}{2139} \right\}, \left\{ 0.314159, \frac{5089}{5380} \right\},$
$\left. \left\{ 0.628319, \frac{6109}{6345} \right\}, \left\{ 0.942478, \frac{624}{641} \right\}, \left\{ 1.25664, \frac{2486}{2517} \right\}, \left\{ \frac{\pi}{2}, \frac{1259}{1276} \right\} \right\}$

Out[●]= $\left\{ \left\{ -\frac{\pi}{2}, \frac{61}{512} \right\}, \left\{ -1.25664, \frac{1101}{8192} \right\}, \left\{ -0.942478, \frac{1543}{8192} \right\}, \right.$
$\left\{ -0.628319, \frac{2197}{8192} \right\}, \left\{ -0.314159, \frac{3221}{8192} \right\}, \left\{ 0., \frac{2139}{4096} \right\}, \left\{ 0.314159, \frac{1345}{2048} \right\},$
$\left. \left\{ 0.628319, \frac{6345}{8192} \right\}, \left\{ 0.942478, \frac{7051}{8192} \right\}, \left\{ 1.25664, \frac{7551}{8192} \right\}, \left\{ 1.5708, \frac{957}{1024} \right\} \right\}$

Out[●]=

Out[ ]=

Out[ ]=

Out[ ]=