

S0

initialXValue = 1
initialYValue = 0
initialZValue
if((initialZValue>1.57)&(initialZValue<3.14))
else if((initialZValue>3.14)&(initialZValue<4.71))

S1

3.141592
32'sb00000000000000011_001001000011111
if((initialZValue>1.57)&(initialZValue<3.14))
1 -1
SUB1
atanValue [numberOfIteration]
sigmaValue
R4
R5
R6
R7
R8

S2

MUL1
sigmaValue
MUL2
sigmaValue
MUL3
sigmaValue
R4
R5
R6
R7
R8

S3

SH1
numberOfIteration
SH2
numberOfIteration
SUB2
R4-R8
sigmaXValue R6
sigmaYValue R7
zValue R4

S4

SUB2
R1-R7
ADD1
R2+R6
R4>=0
1 -1
R4<0
XValue R1
YValue R2
R5

S5

MUL1
scalingValues [numberOfIteration]
MUL2
scalingValues [numberOfIteration]
if((initialZValue>3.14)&(initialZValue<4.7123))
R9 resultCos
R10 resultSin
R1
-1
NEG1
R9 resultCos
R10
-1
NEG2
R10 resultSin

S6

else
else
if((initialZValue>3.14)&(initialZValue<4.7123))
else if((initialZValue>1.57)&(initialZValue<3.14))

```
R1 <- initialXValue; (1)
R2 <- initialYValue; (0)
R3 <- initialZValue;
```

```
if((R3>1.57)&(R3<3.14))
R4 <- R3 - 3.141592; (Sub1)
R5 <- -1;
if((R3>3.14)&(R3<4.71))
R4 <- R3 - 3.141592; (Sub1)
R5 <- -1;
else
R4 <- R3;
R5 <- 1;
```

```
R6 <- R1 x R5; (Mul1)
R7 <- R2 x R5; (Mul2)
R8 <- atanValues[numberOfIteration] x R5; (Mul3)
```

```
R6 <- R6 >> numberOfIteration; (Sh1)
R7 <- R7 >> numberOfIteration; (Sh2)
R4 <- R4 - R8; (Sub2)
```

```
if(R4>=0)
R1 <- R1 - R7; (Sub2)
R2 <- R2 + R6; (Add1)
R5 <- 1;
if(R4<0)
R1 <- R1 - R7; (Sub2)
R2 <- R2 + R6; (Add1)
R5 <- -1;
```

```
R9 <- R1 x scalingValues[numberOfIteration]; (Mul1)
R10 <- R2 x scalingValues[numberOfIteration]; (Mul2)
```

```
if((R3>1.57)&(R3<4.7123))
R9 <- R9 x -1; (Neg1)
R10 <- R10 x -1; (Neg2)
if((R3>3.14)&(R3<4.71))
R9 <- R9 x (-1); (Neg1)
R10 <- R10;
else
R9 <- R9;
R10 <- R10;
```