

Appendix: MATHCAD Program for Intervisibility, by Thomas Riddle

Enter the function as $f(x) := |\cos(\pi \cdot x)|$

Identify the size (n) by define variables i and j . $i := 0..100$ $j := 0..100$

Partition y into n intervals. $y_i := \frac{i}{100}$

Calculate functional values for each y . $F_i := f(y_i)$

Calculate a line-of-sight between points in the interval $s_{i,j} := \frac{F_j - F_i}{\left(\frac{j-i}{100}\right)}$

Create an index variable k of size $(n-1)$ $k := 0..99$

Calculate the secant distance $a_{k+1} := \sqrt{(F_{k+1} - F_k)^2 + .01^2}$

Define a -sub zero to equal 0. $a_0 := 0$

The following program is the LOS(S) algorithm. C is a $m \times n$ matrix and "arc" is a summed distance until the first non-intervisible location. These arc lengths are then plotted overlayed with the function

```

LOS(s) :=
for m ∈ 0..98
    save ← sm,m+1
    Cm,m ← 0
    Cm,m+1 ← 1
    for n ∈ m+2..100
        if sm,n ≥ save
            Cm,n ← 1
            Cn,m ← 1
            save ← sm,n
        (Cm,n ← 0) otherwise
    C
    C := LOS(s)
    arc := C · a
    
```

This is a plot of the intervisibility curve overlayed on the function. The function is the solid curve and the intervisibility is the dashed curve.

This is the plot of the function $|\cos \pi x|$.

