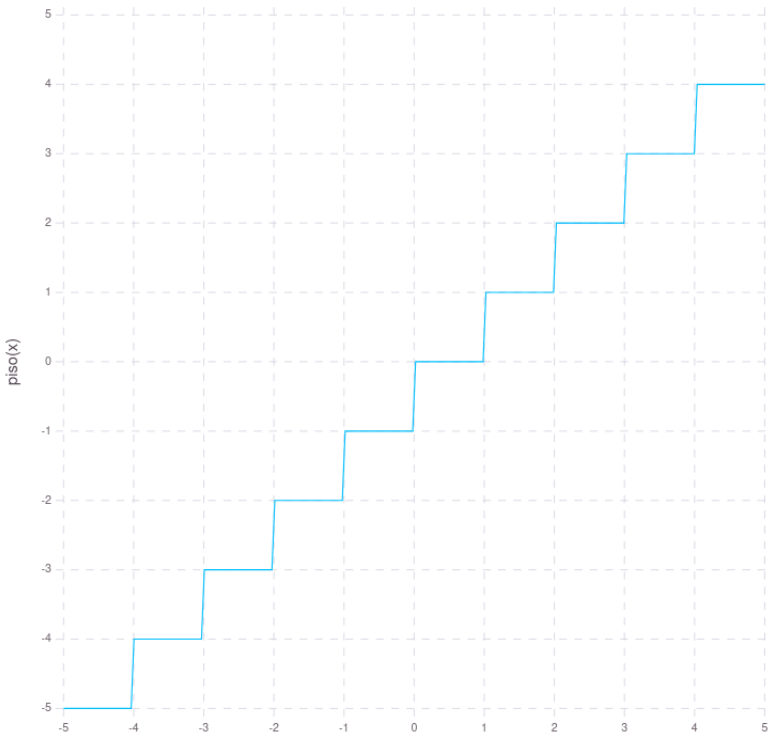
$$
\begin{aligned}
& x - \left(\left(\left(\frac{\arccos(\cos(2\pi x))}{(2\pi)} \right) - \left(\frac{1}{2} \right) \right) \cdot \operatorname{sgn}(\sin(2\pi x)) + \left(\frac{1}{2} \right) \right) \\
&= x - \left\{ \left[\left(\frac{\arccos(\cos(2\pi x))}{(2\pi)} \right) - \left(\frac{1}{2} \right) \right] \cdot \operatorname{sgn}(\sin(2\pi x)) + \left(\frac{1}{2} \right) \right\} \\
&= x - \left\{ \left[\frac{\arccos(\cos(2\pi x))}{2\pi} - \frac{1}{2} \right] \cdot \operatorname{sgn}(\sin(2\pi x)) + \frac{1}{2} \right\} \\
&= x - \left[\left(\frac{\arccos(\cos(2\pi x))}{2\pi} - \frac{1}{2} \right) \cdot \operatorname{sgn}(\sin(2\pi x)) + \frac{1}{2} \right]
\end{aligned}
$$

$$
\lfloor x \rfloor = x - \alpha\alpha = \operatorname{sgn}(\sin(2\pi x)) \left(\frac{\arccos(cos(2\pi x))}{2\pi} - \frac{1}{2} \right) + \frac{1}{2} \operatorname{sgn} = \frac{\operatorname{arccot}(x) - \operatorname{arccot}(-x)}{2|\operatorname{arccot}(x)|}
$$

```
alpha(x) = (acos(cos(2pi*x))/2pi - 1/2) * sign(sin(2pi*x)) + 1/2
piso(x) = x - alpha(x)

using Gadfly
plot(piso, -5, 5,
  Guide.xticks(ticks=-5.0:5.0),
  Guide.yticks(ticks=-5.0:5.0),
  Guide.ylabel("piso(x)"))
```


piso(x)
5
4
3
2
1
0
-1
-2
-3
-4
-5
-5
-4
-3
-2
-1
0
1
2
3
4
5