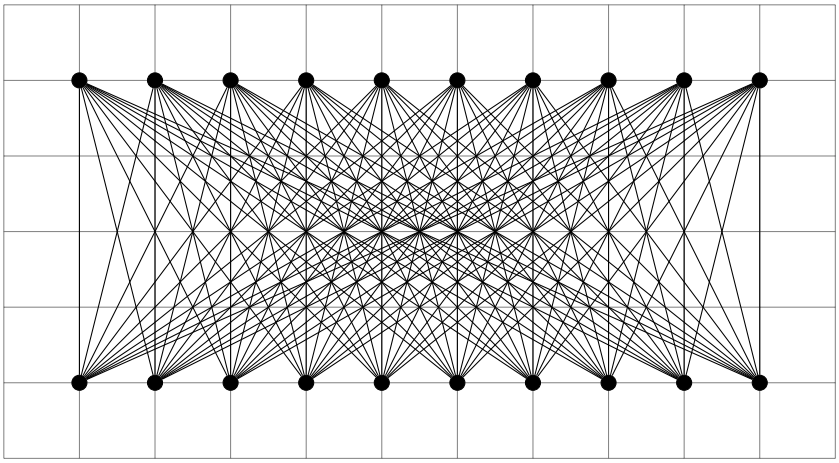
Some Automatically Created Graphs with TikZ

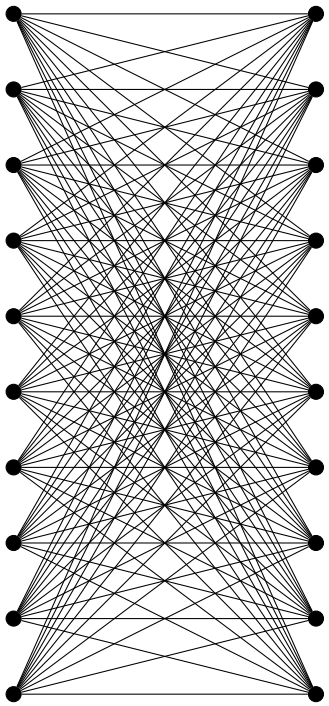
See source code to change number of vertices in each graph

Gerald Todd
University of Montana

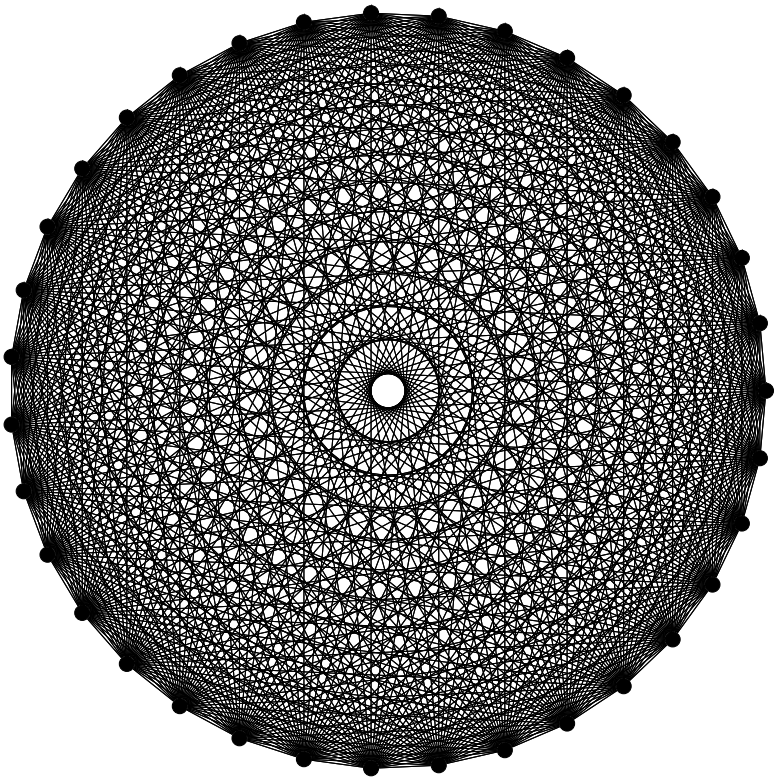
July 23, 2019

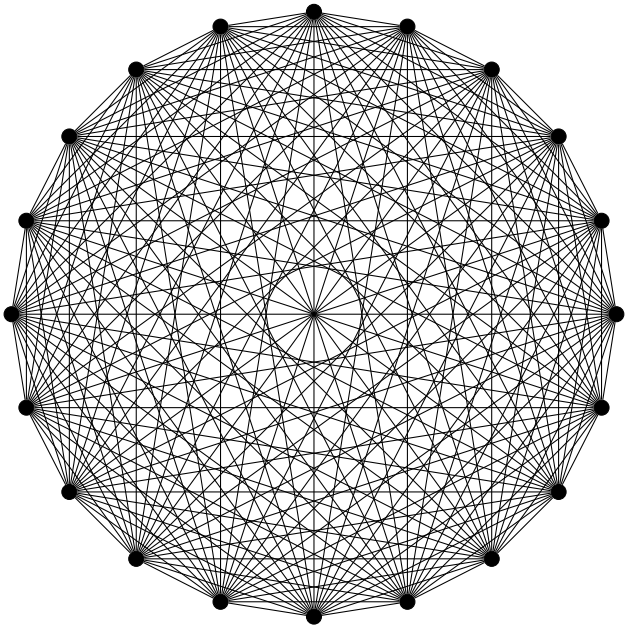
$K_{10,10}$



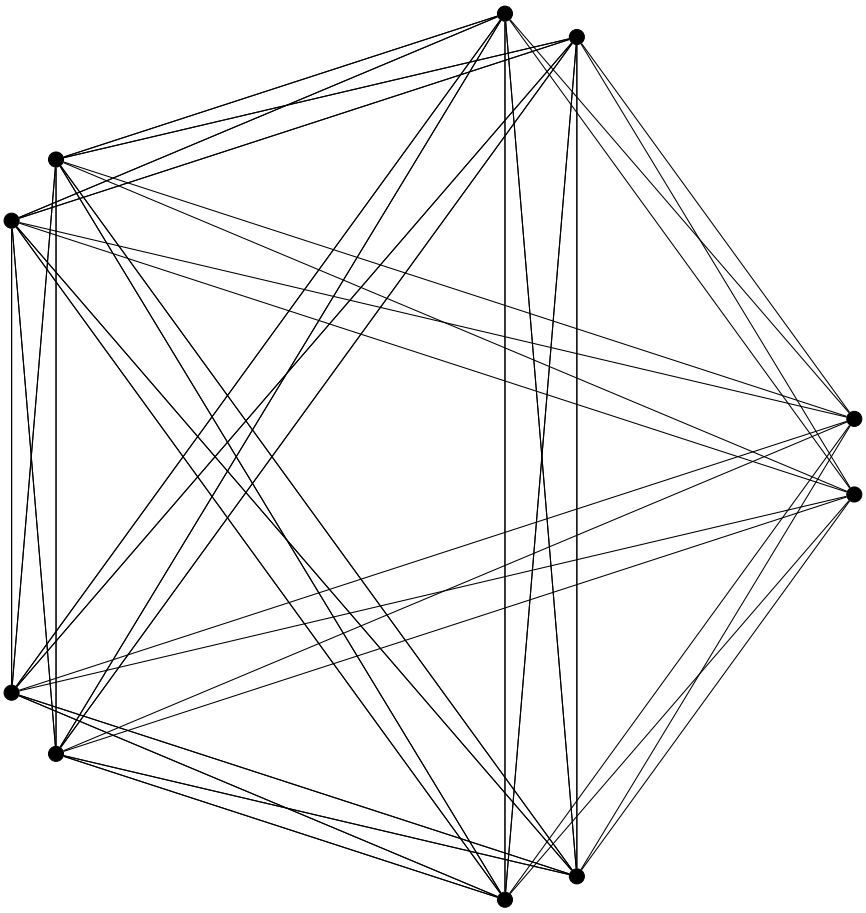


K_{35}



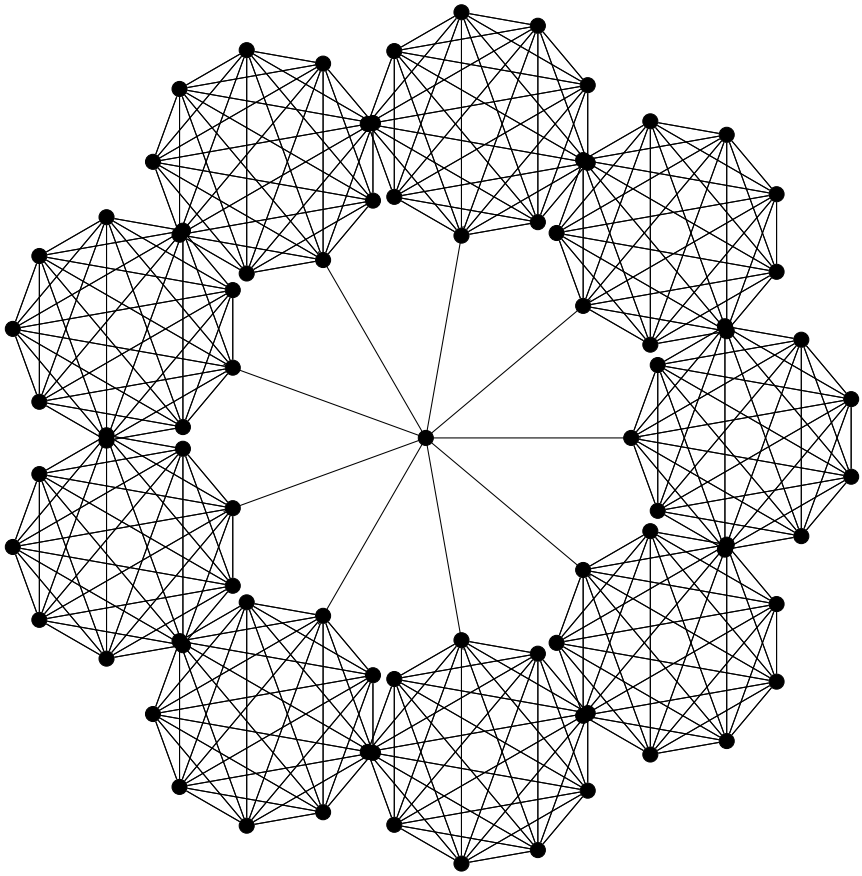


K_2^5

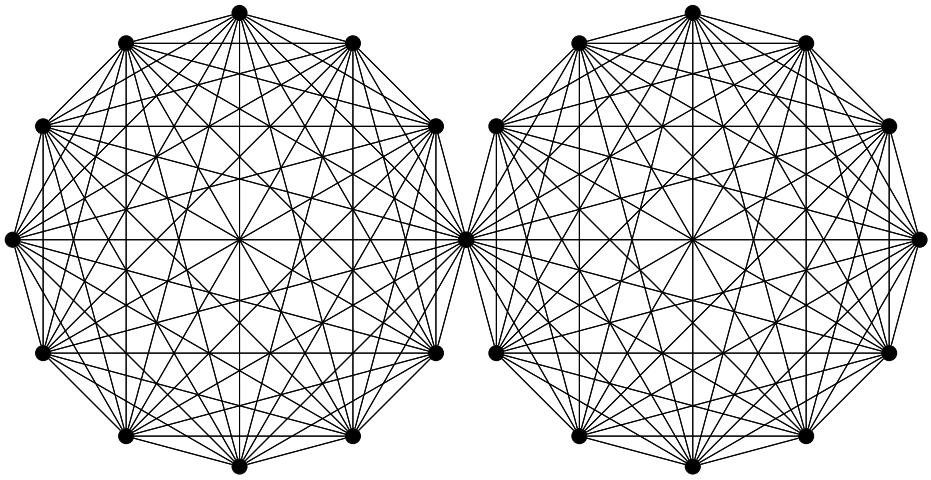


A graph with high minimum degree and a cut vertex

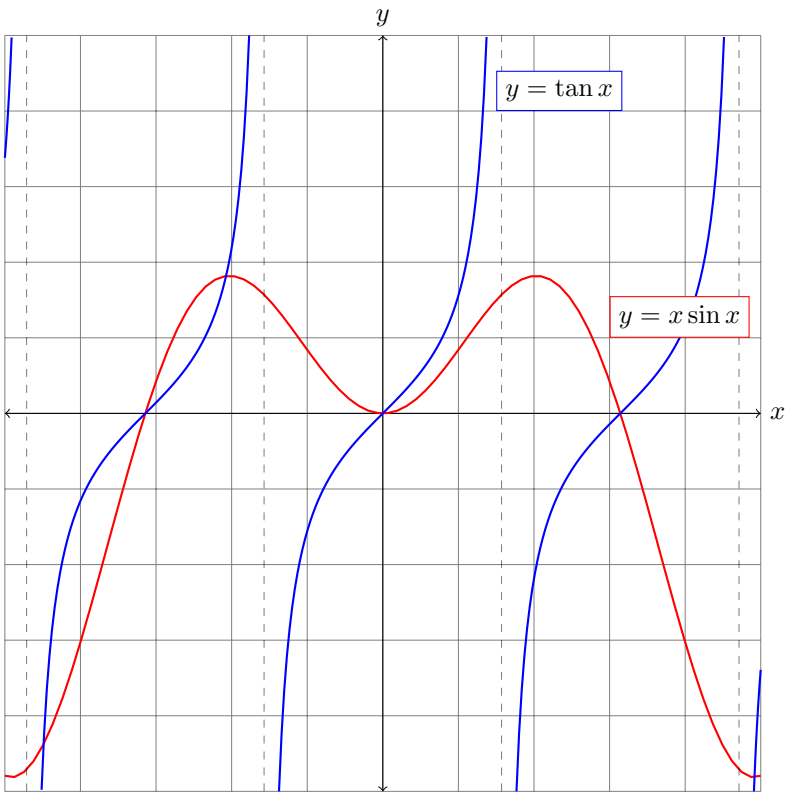
(Example of rotating components who are themselves generated by rotations)



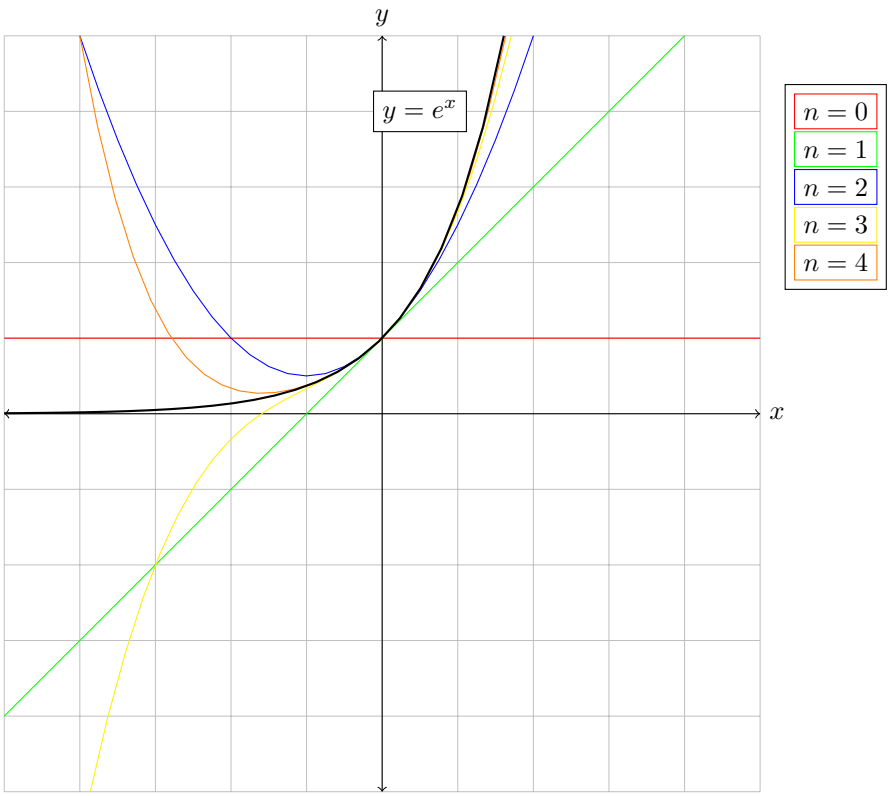
A graph with minimum degree $\frac{n-1}{2}$ but no Hamilton path



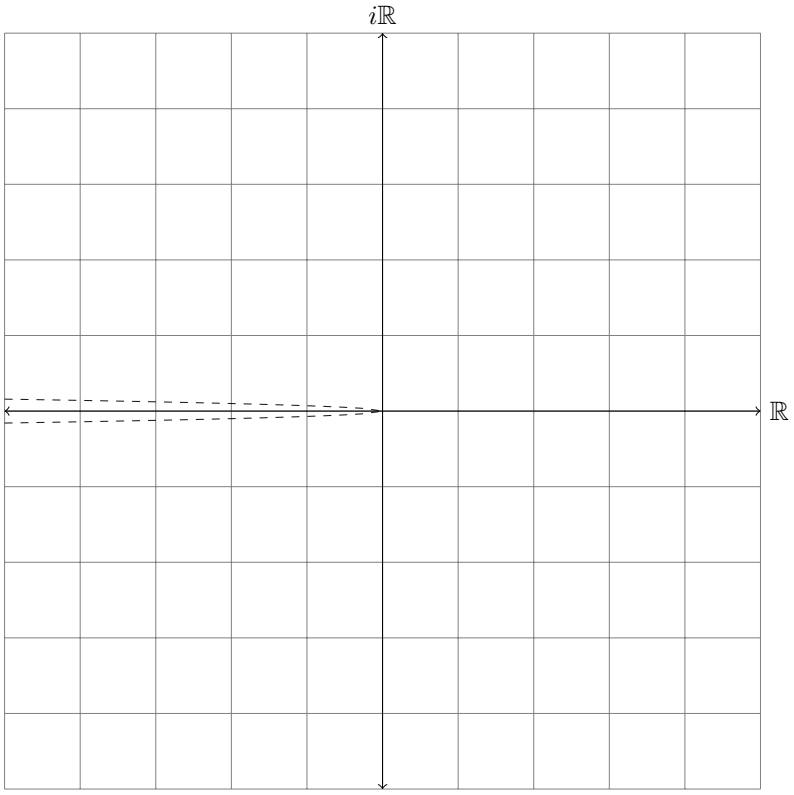
Some Functions



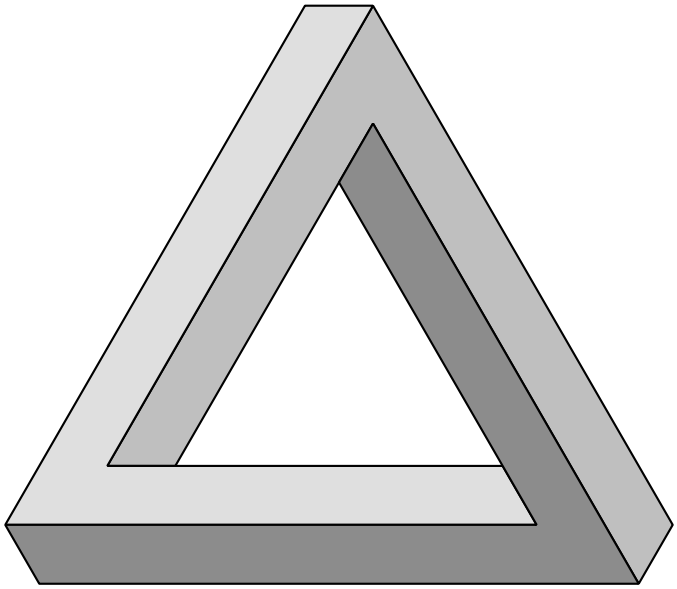
Approximating $f(x) = e^x$ with a partial Taylor Series, $\sum_{k=0}^{n} \frac{x^n}{n!}$.

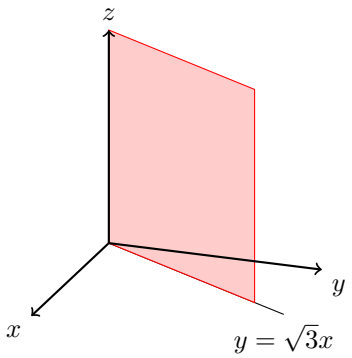


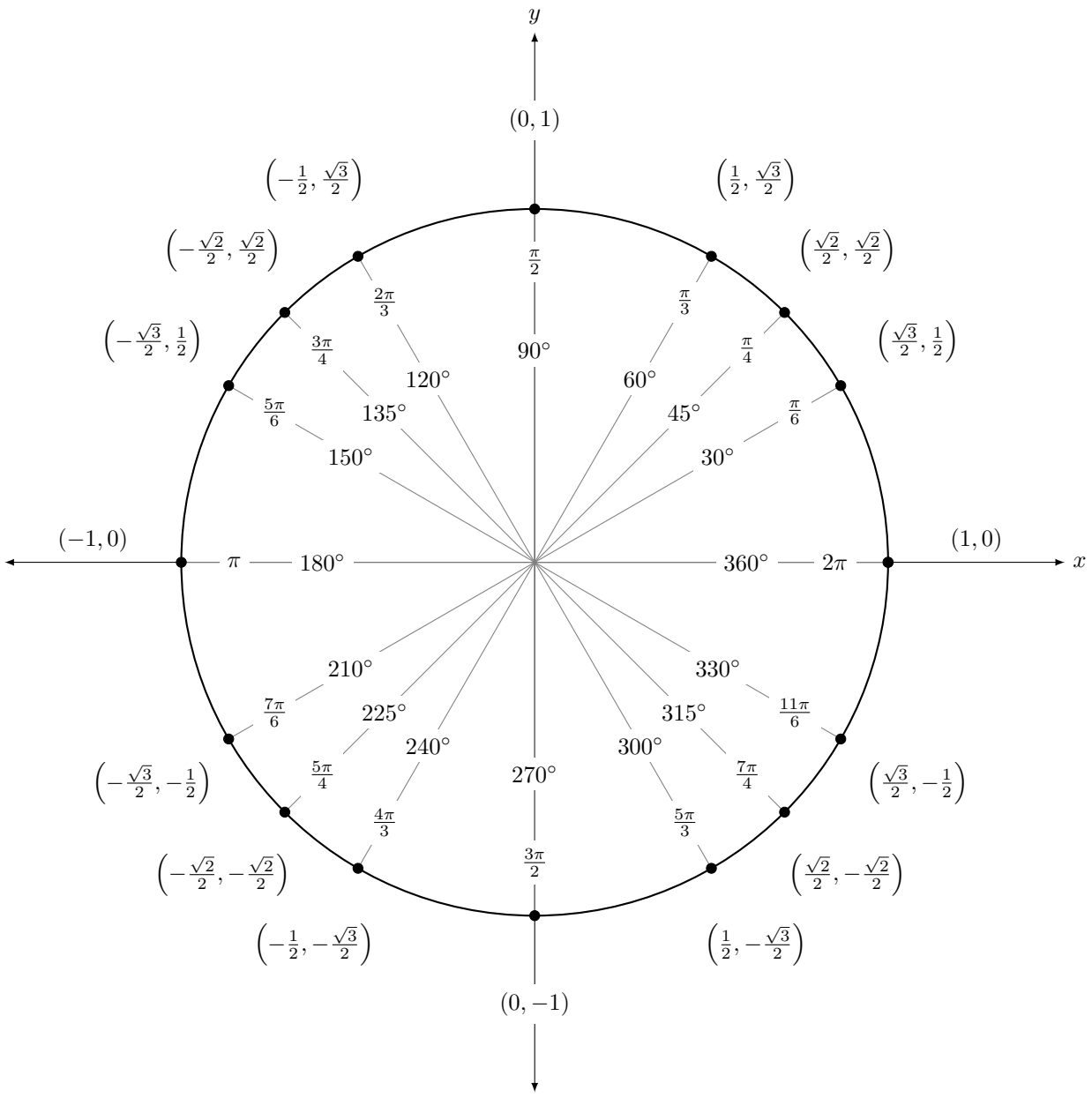
The Slit-Plane



Taken From the Internet
Penrose Triangle




z
y
x
$y = \sqrt{3}x$


y
(0, 1)
$\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$
$\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$
$\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$
$\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$
$\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$
$\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$
$\frac{\pi}{2}$
$\frac{2\pi}{3}$
$\frac{\pi}{3}$
$\frac{3\pi}{4}$
$\frac{\pi}{4}$
90°
120°
60°
$\frac{5\pi}{6}$
$\frac{\pi}{6}$
135°
45°
150°
30°
(−1, 0)
(1, 0)
x
π
180°
360°
2π
210°
330°
$\frac{7\pi}{6}$
$\frac{11\pi}{6}$
225°
315°
240°
300°
$\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$
$\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$
$\frac{5\pi}{4}$
$\frac{7\pi}{4}$
270°
$\frac{4\pi}{3}$
$\frac{5\pi}{3}$
$\left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$
$\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$
$\frac{3\pi}{2}$
$\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$
$\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$
(0, −1)