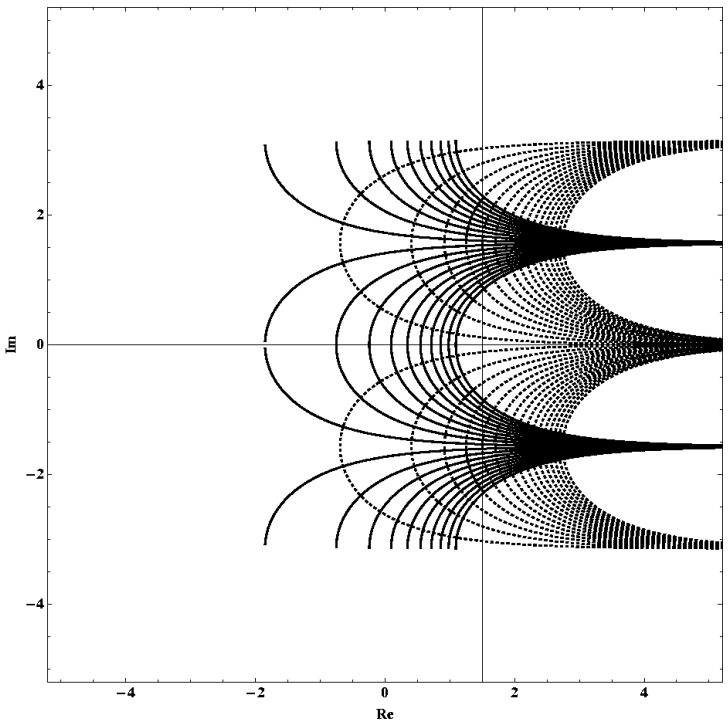
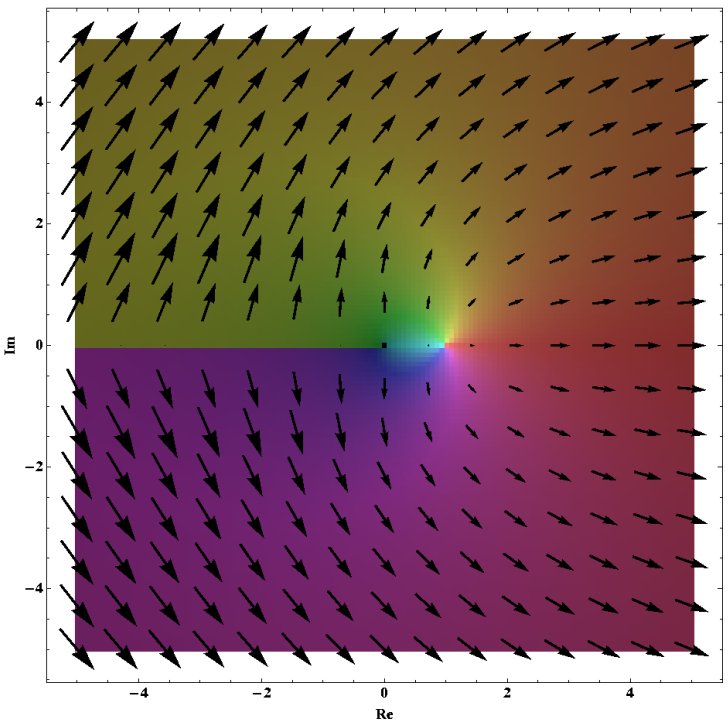
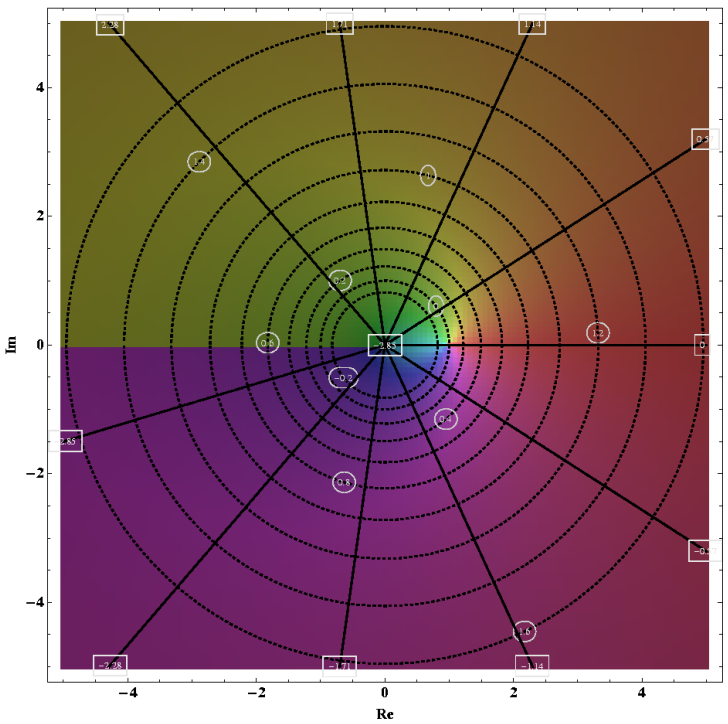
The principal value of the logarithm $\mathrm{Log}(z)$**:**



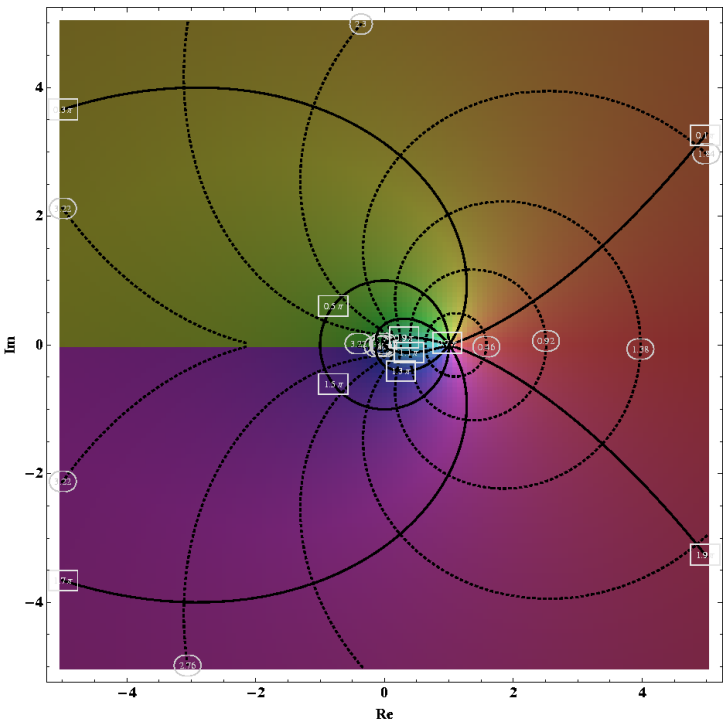
The image of the vertical (solid) and horizontal (dotted) lines under $f(z) = \mathrm{Log}(z)$; they are contained in the strip $\{z \in \mathbb{C} \mid \mathrm{Im}\, z \in (-\pi, \pi]\}$.



Vector field $(\mathrm{Re}\,\mathrm{Log}(z), \mathrm{Im}\,\mathrm{Log}(z))$ and colouring of the complex plane for $\mathrm{Log}(z)$.

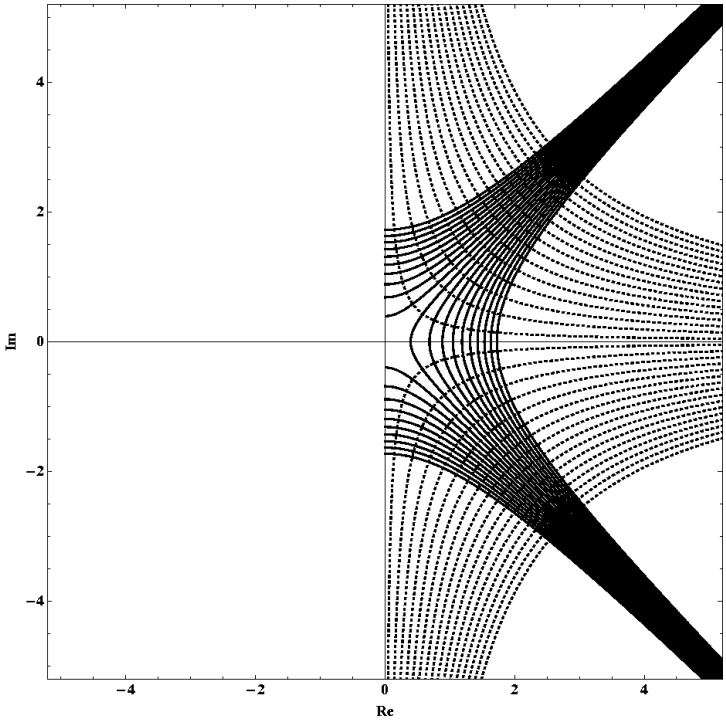


Colouring and level curves of constant real (dotted) and imaginary (solid) part for $\mathrm{Log}(z)$; they intersect perpendicularly.

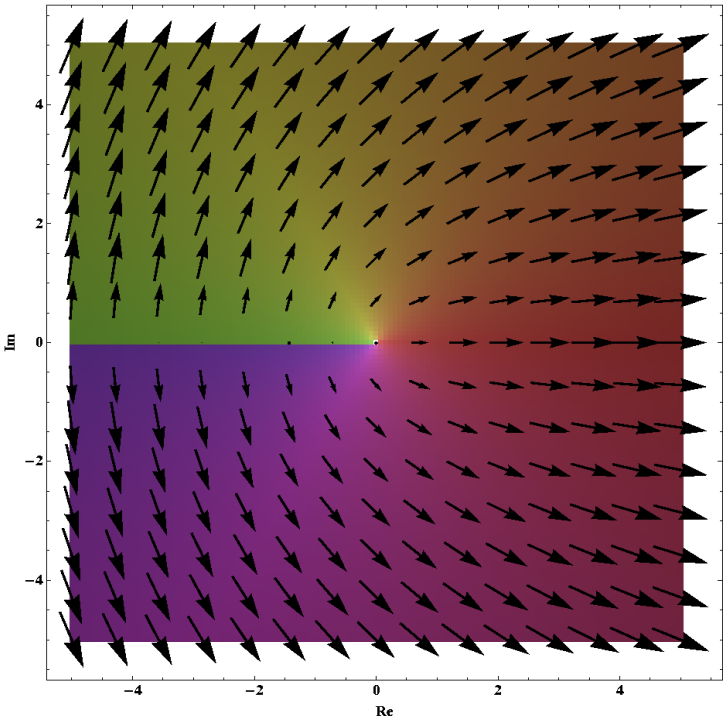


Colouring and level curves of constant modulus (dotted) and argument (solid) for $\mathrm{Log}(z)$; they intersect perpendicularly.

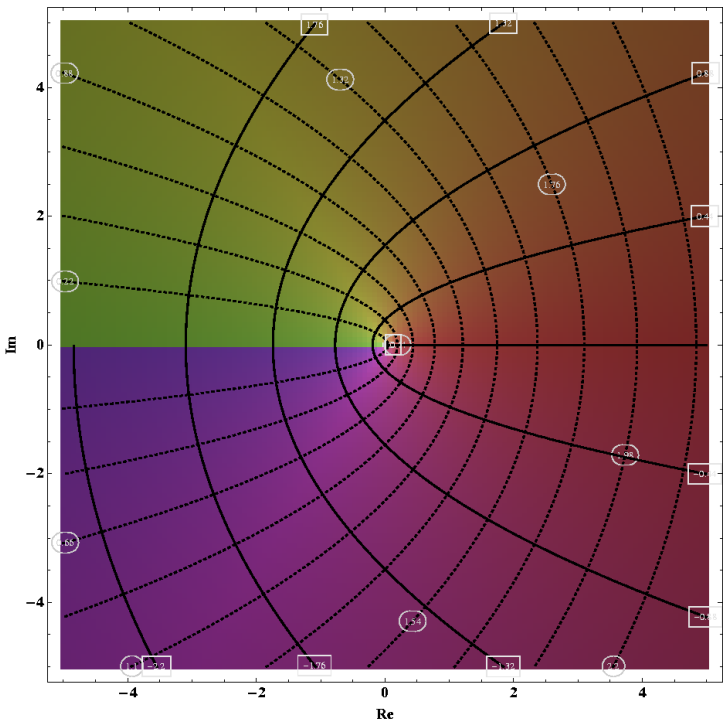
The principal value of the square root $\sqrt{z} = z^{\frac{1}{2}} = \mathrm{e}^{\frac{1}{2}\operatorname{Log}(z)}$:



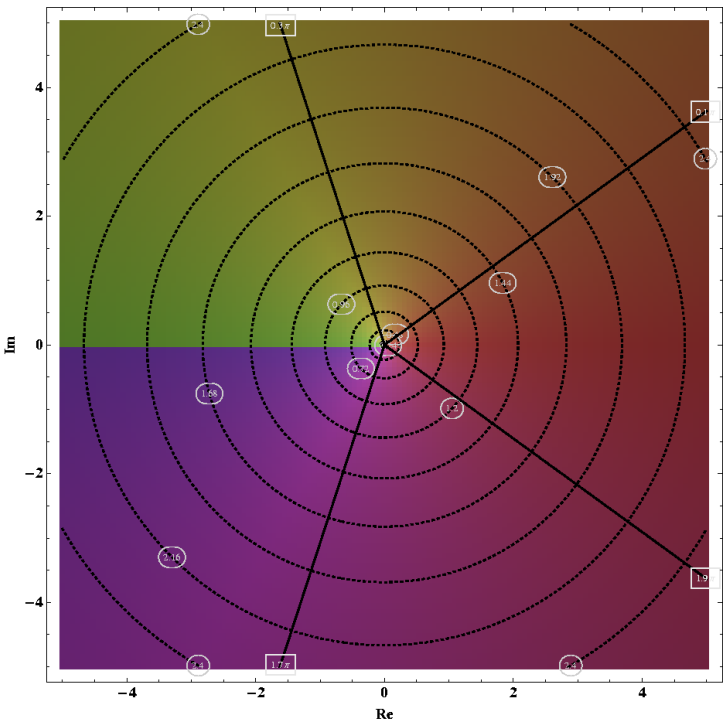
The image of the vertical (solid) and horizontal (dotted) lines under $f(z) = \sqrt{z}$; they are contained in the half plane $\{z \in \mathbb{C} \mid \operatorname{Re} z \geq 0\}$.



Vector field $(\operatorname{Re}\sqrt{z}, \operatorname{Im}\sqrt{z})$ and colouring of the complex plane for $\sqrt{z}$.



Colouring and level curves of constant real (dotted) and imaginary (solid) part for $\sqrt{z}$; they intersect perpendicularly.



Colouring and level curves of constant modulus (dotted) and argument (solid) for $\sqrt{z}$; they intersect perpendicularly.