Domain coloring

Michał Kloc

Presentation plan

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- $\mathbb{C}$omplex numbers

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- HSV color model

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Complex numbers - brief description

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Complex numbers have many interesting applications and properties. They can be used for finding solutions of polynomials, or some differential equations; they are used in electronics to represent alternating current, or to describe rotations. They form field, they have no natural order...

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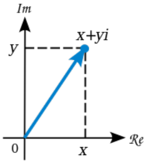
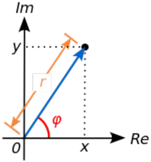
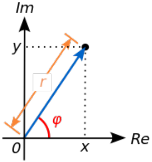
Graphical representation



Polar form



Polar form



Polar form

Each complex number $z = x + yi$ can be represented in so called polar form, wchich consists of two numbers, positive modulus $|z| = \sqrt{x^2 + y^2}$ and angle $\phi \in [0, 2\pi)$ (commonly called argument).

- RGB

- RGB (Red Green Blue)

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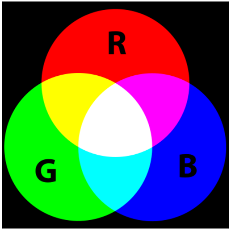
- HSV

- RGB (Red Green Blue)
- HSV (Hue Saturation Value)

In RGB color model colors are represented by three numbers - respectivly red, green and blue. In general integers from range $[0, 255]$ are used to represent colors in computer applications, which gives us 16,777,216 different colors.



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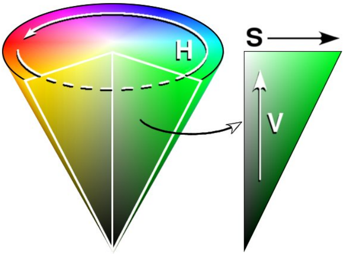

$$f : \mathbb{R} \to \mathbb{R}$$

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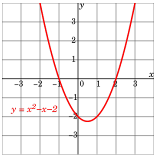

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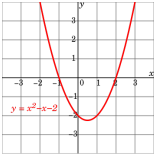

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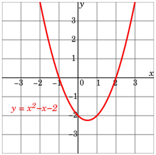

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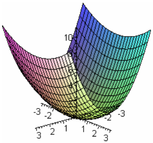

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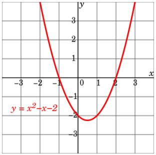

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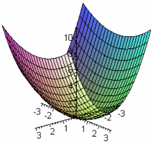

$$f : \mathbb{C} \to \mathbb{C}$$

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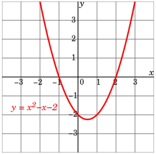
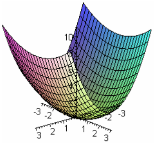


$$f : \mathbb{R}^2 \to \mathbb{R}$$



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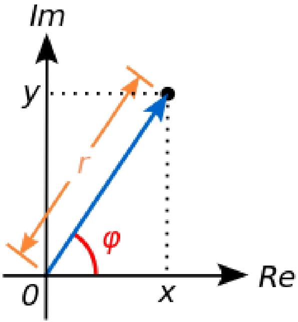

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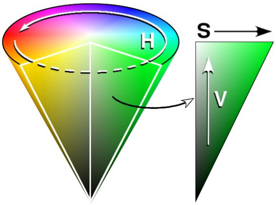

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V

END