Visual Mathematics in Practice

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Theme of the lesson:	Exponential functions
Place in curriculum: (type of school, grade)	Secondary school
Age of the students/pupils:	2nd class (16 years old)
Title of the lesson:	Exponential function and properties

Description of the lesson

Time	Exercises, matters, parts of the lesson	Methods and forms of student activities	Developable competencies
5min. *35min.*	***Introduction:*** Until now you have seen a linear and quadratic function. The topic of the lesson is the exponential function. ***Central part:*** Exponential function is written in the form $y=a^x,\ a>0, a\neq 1$ We will show on the examples how it looks, its graph and what properties does it have. <u>Example1</u>. $y=2^x$, $x=-2 \Rightarrow y=2^{-2}=\frac{1}{4}$ $A(-2,\frac{1}{4})$ $x=-1 \Rightarrow y=2^{-1}=\frac{1}{2}$ $B(-1,\frac{1}{2})$ $x=0 \Rightarrow y=1$ $C(0,1)$ $x=1 \Rightarrow y=2$ $D(1,2)$ $x=2 \Rightarrow y=4$ $E(2,4)$ *From the graph wee can see:* 1) domain of the function is $\mathbb{R}$,$x\in\mathbb{R}$ 2). $y\in(0,+\infty)$ 3). $2^x \neq 0\ \forall x\in\mathbb{R}$ The graph of the function does	*Using the exponentialfunction.ggb we calculate the points and draw the graph.* *-make conclusion about the properties*	*-counting* *-drawing in 2-dimensional system* *-compare* *-draw conclusions*

5min.	not have the intersection point with the x axis and there is no zero function 4).Intersection point on y-axis (0,1) 5).x-axis is the asymptote 6).function is positive y>0 ∀x∈ ℝ 7).function is increasing y↑ ∀x∈ ℝ Example2. $y=0,5^x$, .function is decreasing Example3.. $y=2^x+1$ .....translates the function 2^x by 1-up Example4. $y=2^{x+1}$ translates the function 2^x by 1-left ***The final part:*** Homework $y=3^{x-1}$,	*work in pairs, calculate points and drow graph of function, make conclusions*	

Summary
.The lesson was interesting,exciting and successful.

Supplements	
Used materials:	*exponentialfunction.ggb*
Photos:	*no*