

# Visual Mathematics in Practice

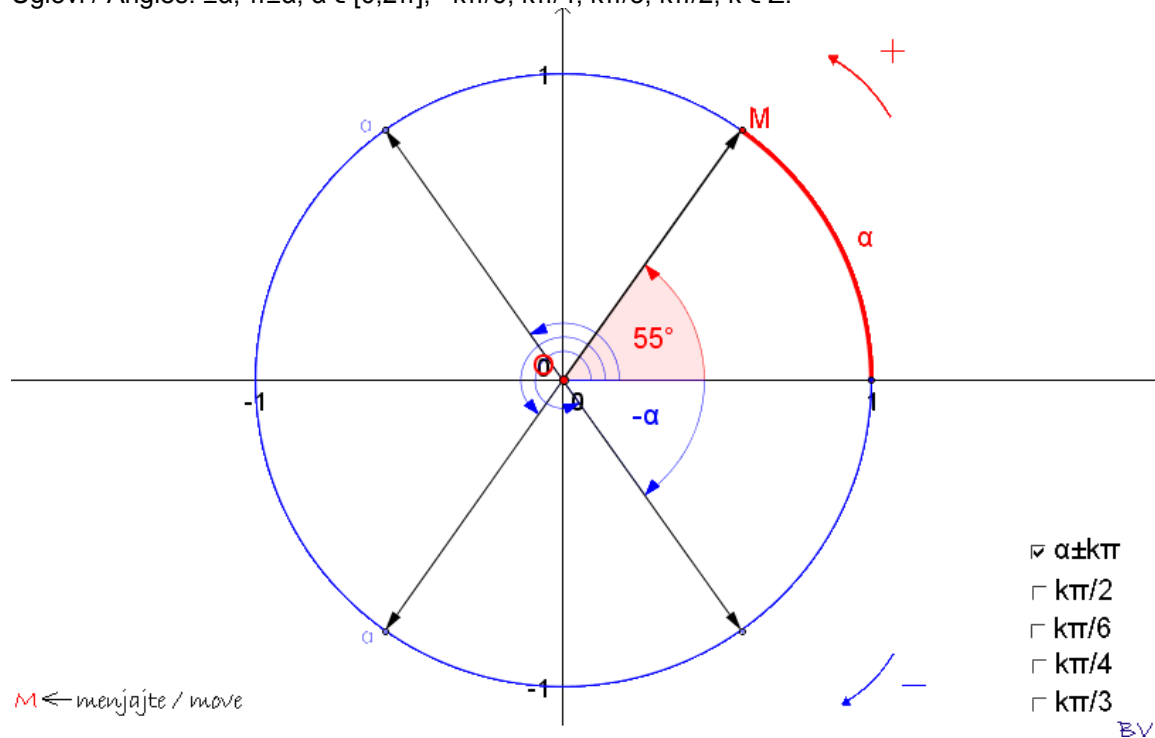


Name of the teacher:	Vesna Babović
Name and address of the school:	Prva niška gimnazija "Stevan Sremac"/ First Nis Grammar School Stevan Sremac, Vožda Karađorđa 27, Niš, Srbija
Theme of the lesson:	<b>Trigonometrija / trigonometry</b> <a href="http://ggbtu.be/c500/m7328/ylyy">http://ggbtu.be/c500/m7328/ylyy</a>
Place in curriculum: (type of school, grade)	Srednja škola, II razred / Secondary school, II grade
Age of the students/pupils:	16
Title of the lesson:	Interaktivne online lekcije / Interactive online lessons:

## 1. Trigonometrijska kružnica / The Unit Circle

<http://www.geogebraTube.org/material/show/id/7328>

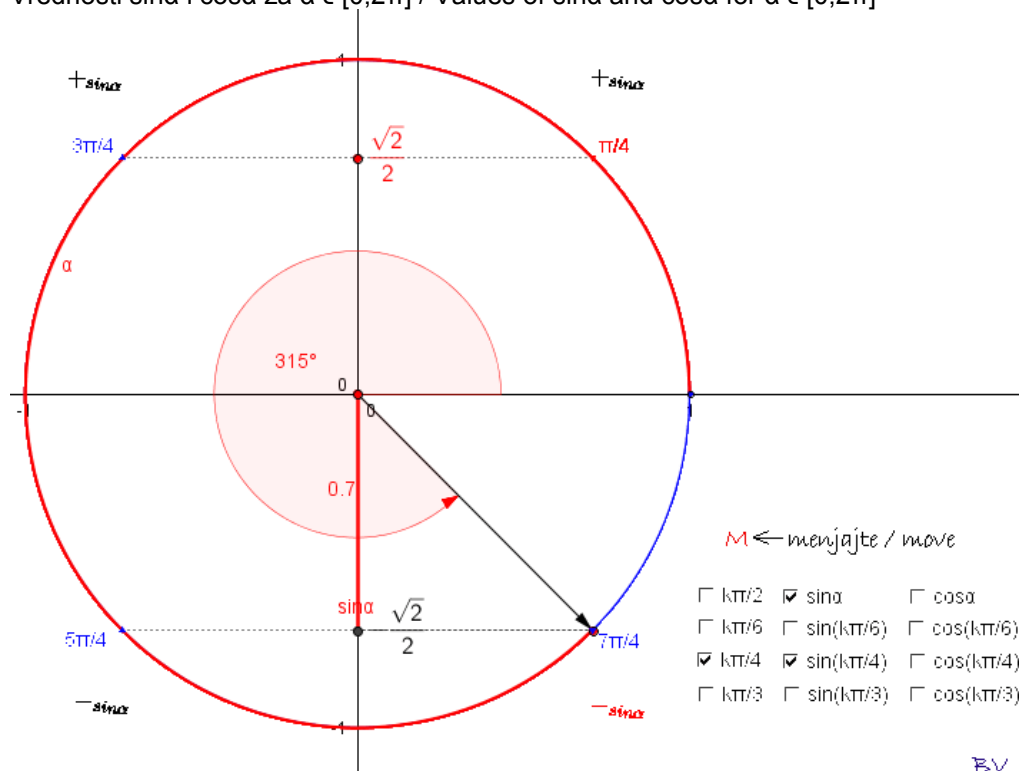
Uglovi / Angles:  $\pm\alpha$ ,  $\pi\pm\alpha$ ,  $\alpha \in [0, 2\pi]$ ;  $k\pi/6$ ,  $k\pi/4$ ,  $k\pi/3$ ,  $k\pi/2$ ,  $k \in \mathbb{Z}$ .



## 2. Sinus i kosinus ugolva / sine and cosine of any angle

<http://www.geogebraTube.org/student/m8097>

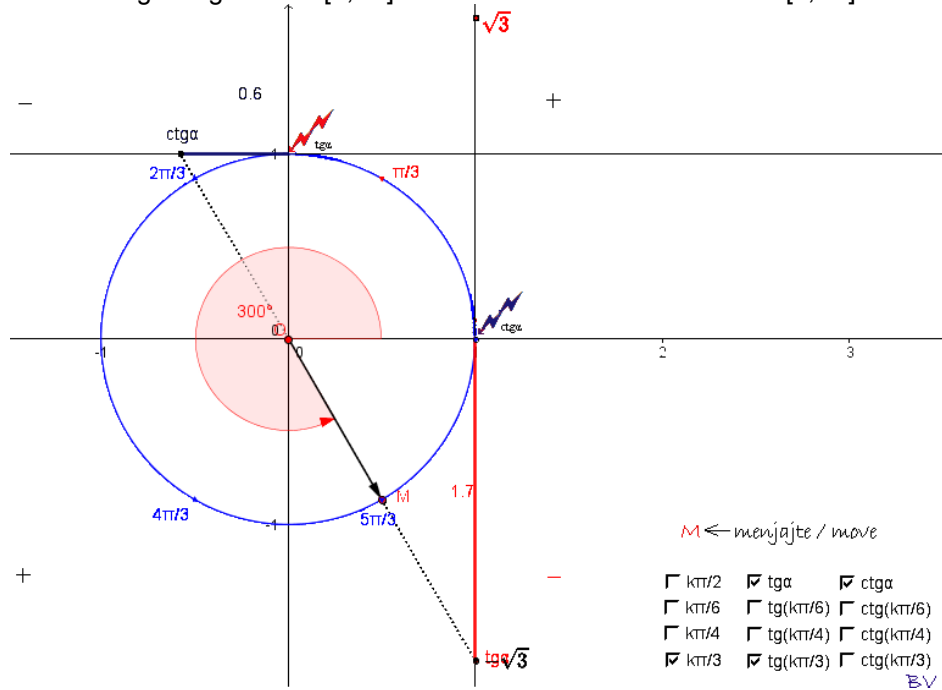
Vrednosti sina i cosa za  $\alpha \in [0, 2\pi]$  / Values of  $\sin\alpha$  and  $\cos\alpha$  for  $\alpha \in [0, 2\pi]$



## 3. Tangens i kotangens uglova / tan and cot of any angle

<http://www.geogebraTube.org/student/m8115>

Vrednosti tga i ctga za  $\alpha \in [0, 2\pi]$  / Values of  $\tan\alpha$  and  $\cot\alpha$  for  $\alpha \in [0, 2\pi]$



#### 4. Trigonometrijske funkcije - Trigonometric functions

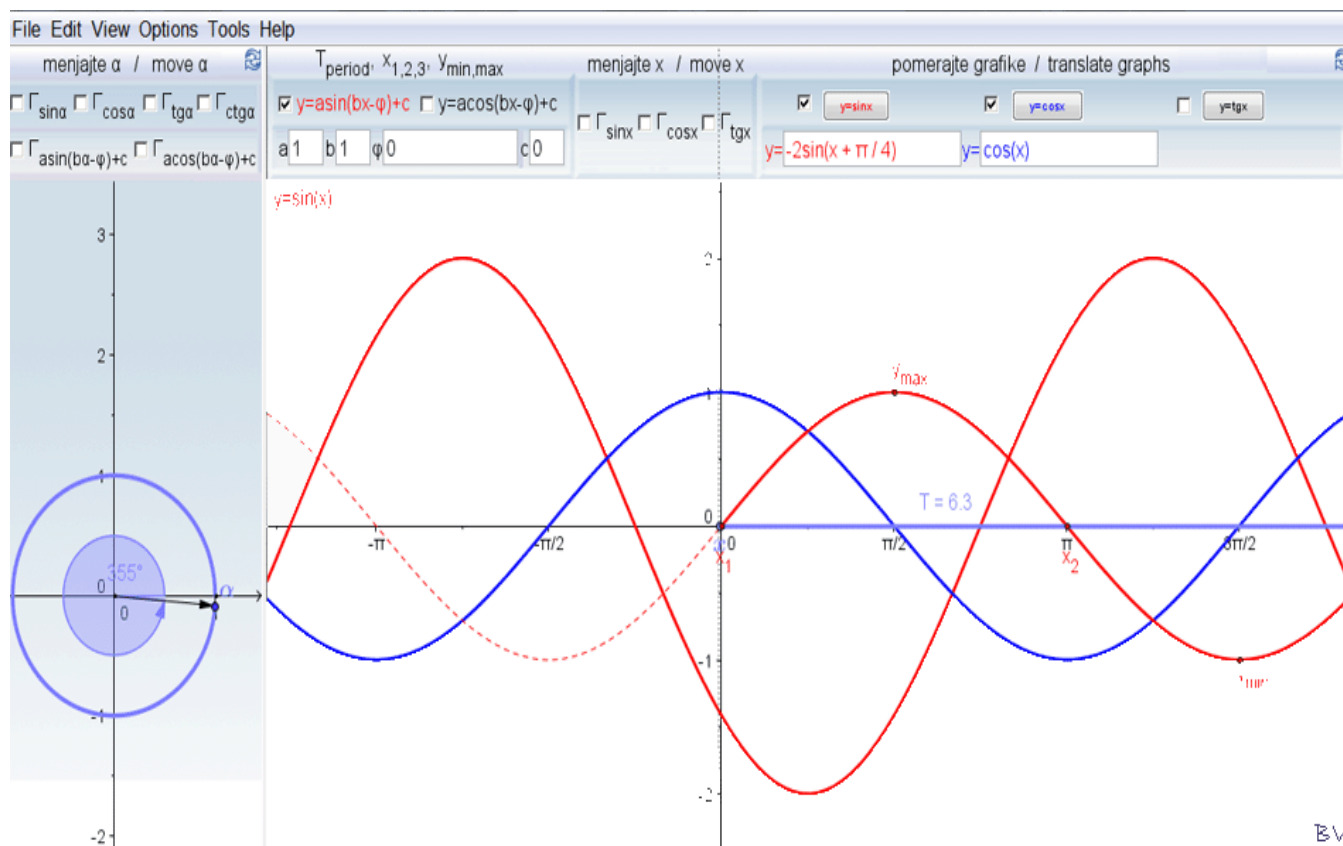
<http://www.youtube.com/watch?v=dHrldYLkVTo> (tutorial)

<http://www.geogebra.org/material/show/id/9878>

Crtanje grafika trigonometrijskih funkcija na 5 načina / Drawing graphs of trigonometric functions in 5 ways.

Crtanje grafika / Sketching graphs:

- 1) menjanjem ugla  $a$  na kružnici / moving angle  $a$  in the unit circle;
- 2) period, nule, min, max i skicu za  $a, b, c, f \in \mathbb{R}$  / period, intercepts, min, max and sketch for  $a, b, c, f \in \mathbb{R}$ ;
- 3) menjanjem ugla  $x$  na  $x$ -osi / moving angle  $x$  in the  $x$ -axis;
- 4) pomeranjem grafika u ravni / translating graphs in the plan;
- 5) pisanjem formula u prazna polja / writing formulas in the input boxes.

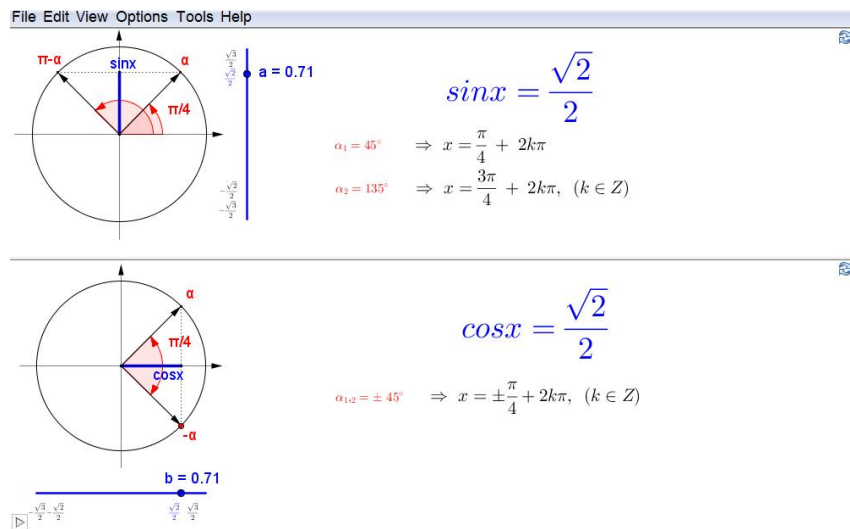


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## 5. Trigonometrijske jednačine / Trigonometric equations

<http://www.geogebra.org/m/material/show/id/11239>

$\sin x = a$ ,  $\cos x = b$  - Rešavanje osnovnih jednačina pomoću trigonometrijske kružnice / Solving basic equations by using the unit circle. ( Menjajte / Change a,b  $\in [-1,1]$  )



## 6. Trigonometrijske nejednačine / Trigonometric inequalities

<http://www.geogebra.org/m/material/show/id/12179>

$\sin x \geq a$ ,  $\cos x \geq b$  - Rešavanje osnovnih nejednačina pomoću trigonometrijske kružnice / Solving basic inequalities by using the unit circle. ( Menjajte / Change a,b  $\in [-1,1]$  )

