

Title

Trigonometric functions
Trigonometrijske funkcije

Author(s)

Name: Tatjana Stankovic Organization: Electrical Engineering School „Nikola Tesla“, Pancevo Role: teacher
Name: Ljiljana Djuretanovic Organization: Technical School „23.Maj“, Pancevo Role: teacher
Name: Nada Rankovic Organization: Economic and Trade School „Paja Marganovic“, Pancevo Role: teacher

Short description/ main idea

Learning and practice of trigonometric functions and their application in different classes in different contexts.
Usvajanje i uvezbavanje trigonometrijskih funkcija i njihove primene na razlicitim casovima u razlicitim kontekstima.

Learning objectives

Cognitive - Knowledge: Conceptual, Procedural

Cognitive - Process: To remember, To understand, To apply, To think critically and creatively

Affective: To pay attention, To respond and participate

Psychomotor: To imitate and try, To perform confidentially following instructions, To perform independently, skillfully and precisely, To adapt and perform creatively

Learning activities

Phase 1: Trigonometric functions (lesson 1)

Description of phase: Video lesson on trigonometric functions and their applications - a homework assignment, pupils use the information from the teachers' blog (<http://eteblog.wordpress.com/linkovi/>) to prepare so that they could present a given function to other pupils. Pupils are divided into 4 groups.

Activities

1.1: Each group presents given trigonometric function to other groups in the classroom.

Phase 1: Trigonometrijske funkcije (1.cas)

Description of phase: Video lekcija o trigonometrijskim funkcijama i njihovim primenama - domaci zadatak, ucenici koriste informacije sa bloga nastavnika (<http://eteblog.wordpress.com/linkovi/>) kako bi se pripremili da prezentuju zadatu funkciju drugim ucenicima. Ucenici su podeljeni u 4 grupe.

Activities

1.1: Svaka grupa prezentuje na casu zadatu trigonometrijsku funkciju ostalim ucenicima.

Phase 2: Trigonometric functions (lesson 2)

Description of phase: Divided into four groups, pupils plot graphs of trigonometric functions using GeoGebra . Each group examines the flow and characteristics of a given function using its graph and then each group presents its observations and conclusions.

Activities

2.1: Graphing a given function by using GeoGebra

2.2: Examination of a flow of a given function based on its graphics

2.3: Discussion and conclusions

Phase 2: Trigonometrijske funkcije (2.cas)

Description of phase: Podeljeni u 4 grupe ucenici uz pomoc GeoGebre crtaju grafike trigonometrijskih funkcija. Svaka grupa na osnovu grafika

ispituje tok i osobine jedne zadate funkcije, a potom prezentuje svoja opazanja i zakljucake do kojih su dosli.

Activities

- 2.1: Crtanje grafika date funkcije uz pomoc GeoGebre
- 2.2: Ispitivanje toka date funkcije na osnovu grafika
- 2.3: Diskusija i zakljucci

Phase 3: Trigonometric functions (lesson 3)

Description of phase: Pupils plot graphs of functions $y = \text{asin}(bx + c)$ and $y = \text{acos}(bx + c)$ using GeoGebra and examine their flow. After that they present their conclusions.

Activities

- 3.1: Graphing function $y = \text{asin}(bx + c)$ and $y = \text{acos}(bx + c)$ using GeoGebra
- 3.2: Examination of the flow function $y = \text{asin}(bx + c)$ and $y = \text{acos}(bx + c)$ based on resulting graphics
- 3.3: Discussion and conclusions

Phase 3: Trigonometrijske funkcije (3.cas)

Description of phase: Ucenici crtaju grafike funkcija oblika $y = \text{asin}(bx+c)$ i $y = \text{acos}(bx+c)$ pomocu GeoGebre i ispituju njihov tok. Nakon toga prezentuju svoje zakljucke.

Activities

- 3.1: Crtanje grafika funkcije oblika $y = \text{asin}(bx+c)$ i $y = \text{acos}(bx+c)$ pomocu GeoGebre
- 3.2: Ispitivanje toka funkcija oblika $y = \text{asin}(bx+c)$ i $y = \text{acos}(bx+c)$ na osnovu dobijenog grafika
- 3.3: Diskusija i zakljucci

Language

English
Serbian

Grade & Age

Age: 16-17
Age: 16-17
Grade: secondary education

Domain

ICT>Using ICT
Mathematics>Analysis>Real Analysis>Graphical Representation of Function

Keywords/subject

trigonometry, function, GeoGebra, ETE blog
trigonometrija, funkcija, GeoGebra, ETE blog

Prerequisites

concept of function, function's graph and characteristics
pojam funkcije, grafik i osobine funkcije

Difficulty

medium

Learning environment

Computer-based, Lecture-based, Video

Duration

2 Hours & 15 Minutes

Teaching approach

Behaviourist: Programmed instruction

Cognitivist: Collaborative learning, Inquiry learning, Problem \square based, Reciprocal teaching

Constructivist: Cognitive apprenticeship, Socratic instruction, Experiential learning, Action research

Assessment strategy

Not assessed

Phases

1.Trigonometric functions (lesson 1)

1.Trigonometrijske funkcije (1.cas)

Description of phase

Video lesson on trigonometric functions and their applications - a homework assignment, pupils use the information from the teachers' blog (<http://eteblog.wordpress.com/linkovi/>) to prepare so that they could present a given function to other pupils. Pupils are divided into 4 groups. Video lekcija o trigonometrijskim funkcijama i njihovim primenama - domaci zadatak, učenici koriste informacije sa bloga nastavnika (<http://eteblog.wordpress.com/linkovi/>) kako bi se pripremili da prezentuju zadatu funkciju drugim uenicima. Učenici su podeljeni u 4 grupe.

Learning activities

1.1 Each group presents given trigonometric function to other groups in the classroom.

1.1 Svaka grupa prezentuje na casu zadatu trigonometrijsku funkciju ostalim uenicima.

Phases

2.Trigonometric functions (lesson 2)

2.Trigonometrijske funkcije (2.cas)

Description of phase

Divided into four groups, pupils plot graphs of trigonometric functions using GeoGebra . Each group examines the flow and characteristics of a given function using its graph and then each group presents its observations and conclusions.

Podeljeni u 4 grupe učenici uz pomoc GeoGebre crtaju grafike trigonometrijskih funkcija. Svaka grupa na osnovu grafika ispituje tok i osobine jedne zadate funkcije, a potom prezentuje svoja opazanja i zakljucake do kojih su dosli.

Learning activities

2.1 Graphing a given function by using GeoGebra

2.1 Crtanje grafika date funkcije uz pomoc GeoGebre

2.2 Examination of a flow of a given function based on its graphics

2.2 Ispitivanje toka date funkcije na osnovu grafika

2.3 Discussion and conclusions

2.3 Diskusija i zakljucci

Phases

3.Trigonometric functions (lesson 3)

3.Trigonometrijske funkcije (3.cas)

Description of phase

Pupils plot graphs of functions $y = \text{asin}(bx + c)$ and $y = \text{acos}(bx + c)$ using GeoGebra and examine their flow. After that they present their conclusions.

Ucenici crtaju grafike funkcija oblika $y=\text{asin}(bx+c)$ i $y=\text{acos}(bx+c)$ pomocu GeoGebre i ispituju njihov tok. Nakon toga prezentuju svoje zakljucke.

Learning activities

3.1 Graphing function $y = \text{asin}(bx + c)$ and $y = \text{acos}(bx + c)$ using GeoGebra

3.1 Crtanje grafika funkcije oblika $y=\text{asin}(bx+c)$ i $y=\text{acos}(bx+c)$ pomocu GeoGebre

3.2 Examination of the flow function $y = \text{asin}(bx + c)$ and $y = \text{acos}(bx + c)$ based on resulting graphics

3.2 Ispitivanje toka funkcija oblika $y=\text{asin}(bx+c)$ i $y=\text{acos}(bx+c)$ na osnovu dobijenog grafika

3.3 Discussion and conclusions

3.3 Diskusija i zakljucci