

Ime i prezime: Matko Sinus

Razred: 3.r

Redni broj u imeniku: 14

Domaća zadaća iz matematike - grafovi trigonometrijskih funkcija

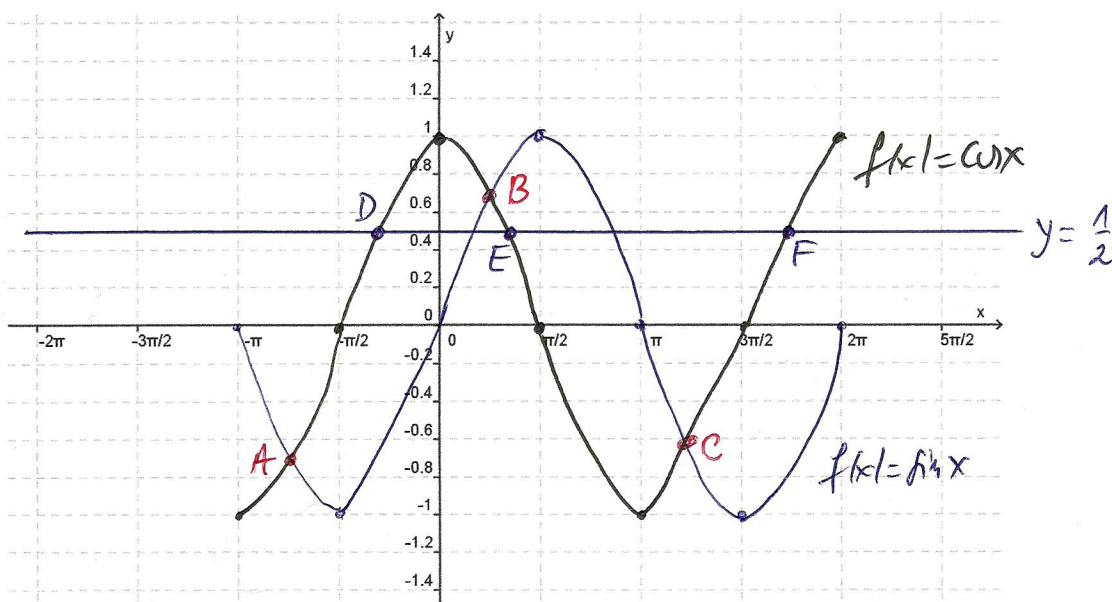
Broj zadatka	Bodovi
1.	
8.	
15.	
Σ	

Pazin, 29.1.2014.

1. zadatak: (1) Nacrtaj grafove funkcija sinus i kosinus na intervalu $[-\pi, 2\pi]$.

- a. označi točke u kojima su vrijednosti sinusa i kosinusa jednake. A, B, C $f(x) = \cos x$
 b. označi točke u kojima je vrijednost funkcije kosinus jednaka 0.5.

D, E, F $\cos x = \frac{1}{2}$



8. zadatak: Odredi nultočke, točke maksimuma i minimuma, pomak, amplitudu, period

te nacrtaj funkcije $f(x) = -3 \cos\left(2x + \frac{\pi}{4}\right)$

$f(x)$	amplituda	period	pomak	nultočke	minimum	maksimum
$f(x) = -3 \cos\left(2x + \frac{\pi}{4}\right)$	3	π	$-\frac{\pi}{8}$	$\frac{\pi}{8} + k\pi$	$-\frac{\pi}{8} + k\pi$	$\frac{3\pi}{8} + k\pi, k \in \mathbb{Z}$

15. zadatak: Odredi period, nultočke i asimptote funkcije $f(x) = \frac{1}{3} \operatorname{tg}\left(\frac{1}{2}x - \frac{2\pi}{3}\right)$.

Nacrtaj funkciju.

$f(x)$	period	nultočke	asimptote
$f(x) = \frac{1}{3} \operatorname{tg}\left(\frac{1}{2}x - \frac{2\pi}{3}\right)$	2π	$\frac{4\pi}{3} + 2k\pi$	$\frac{7\pi}{3} + 2k\pi, k \in \mathbb{Z}$

$$⑧) f(x) = -3 \cos\left(2x + \frac{\pi}{4}\right)$$

$A = 3$
amplitudo

$$P = \frac{2\pi}{|b|} = \frac{2\pi}{2} = \pi$$

periode

$$x_0 = -\frac{c}{b} = -\frac{\pi/4}{2}$$

periode

mul dodee $f(x) = 0$

$$-3 \cos\left(2x + \frac{\pi}{4}\right) = 0 \quad | : (-3)$$

$$\cos\left(2x + \frac{\pi}{4}\right) = 0$$

$$2x + \frac{\pi}{4} = \frac{\pi}{2} + k\pi$$

$$2x = \frac{\pi}{4} + k\pi \quad | : 2$$

$$x = \frac{\pi}{8} + \frac{k\pi}{2}, \text{ ket}$$

$$-\frac{3\pi}{8} \quad \frac{\pi}{8} \quad \frac{5\pi}{8} \quad \frac{9\pi}{8} \dots$$

dodee maksimum $f(x) = -3$

$$-3 \cos\left(2x + \frac{\pi}{4}\right) = -3 \quad | : (-3)$$

$$\cos\left(2x + \frac{\pi}{4}\right) = 1$$

$$2x + \frac{\pi}{4} = 2k\pi$$

$$2x = -\frac{\pi}{4} + 2k\pi \quad | : 2$$

$$x = -\frac{\pi}{8} + k\pi, \text{ ket}$$

$$-\frac{9\pi}{8} \quad -\frac{\pi}{8} \quad \frac{7\pi}{8} \dots$$

dodee maksimum $f(x) = 3$

$$-3 \cos\left(2x + \frac{\pi}{4}\right) = 3 \quad | : (-3)$$

$$\cos\left(2x + \frac{\pi}{4}\right) = -1$$

$$2x + \frac{\pi}{4} = \pi + 2k\pi$$

$$2x = \frac{3\pi}{4} + 2k\pi \quad | : 2$$

$$x = \frac{3\pi}{8} + k\pi, \text{ ket}$$

$$-\frac{5\pi}{8} \quad \frac{3\pi}{8} \quad \frac{11\pi}{8} \dots$$

$$(15) f(x) = \frac{1}{3} \tan\left(\frac{1}{2}x - \frac{2\pi}{3}\right)$$

$$p = \frac{2\pi}{b} = \frac{\pi}{\frac{1}{2}} = \underline{2\pi}$$

period

meliputi $f(x) = 0$

$$\sin\left(\frac{1}{2}x - \frac{2\pi}{3}\right) = 0$$

$$\frac{1}{2}x - \frac{2\pi}{3} = k\pi$$

$$\frac{1}{2}x = \frac{2\pi}{3} + k\pi \quad | \cdot 2$$

$$x = \underline{\underline{\frac{4\pi}{3} + 2k\pi, k \in \mathbb{Z}}}$$

$$\underline{\underline{\frac{-2\pi}{3}, \frac{4\pi}{3}, \frac{10\pi}{3}, \dots}}$$

asimptote

$$\cos\left(\frac{1}{2}x - \frac{2\pi}{3}\right) = 0$$

$$\frac{1}{2}x - \frac{2\pi}{3} = \frac{\pi}{2} + k\pi \quad | \cdot 2$$

$$x - \frac{4\pi}{3} = \pi + 2k\pi$$

$$x = \underline{\underline{\frac{7\pi}{3} + 2k\pi, k \in \mathbb{Z}}}$$

$$\underline{\underline{\frac{-5\pi}{3}, \frac{\pi}{3}, \frac{7\pi}{3}, \frac{13\pi}{3}, \dots}}$$

$$f(-\pi) = \frac{1}{3} \tan\left(-\frac{\pi}{2} - \frac{2\pi}{3}\right) = -\frac{\sqrt{3}}{9} = -0,19 = f(\pi)$$

$$f\left(-\frac{\pi}{3}\right) = \frac{1}{3} \tan\left(-\frac{\pi}{6} - \frac{2\pi}{3}\right) = \frac{\sqrt{3}}{9} = 0,19 = f\left(\frac{\pi}{3}\right)$$

$$f(0) = \frac{1}{3} \tan\left(-\frac{2\pi}{3}\right) = \frac{\sqrt{3}}{3} = 0,58 = f(2\pi)$$

$$f\left(\frac{2\pi}{3}\right) = f\left(-\frac{4\pi}{3}\right) = -0,58$$

Grafovi trigonometrijskih funkcija

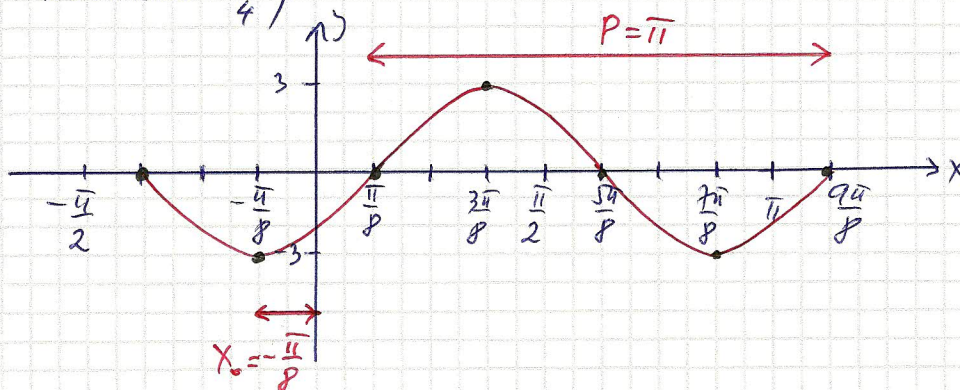
Ime učenika:

Razred:

Datum:



$$p) f(x) = -3 \cos\left(2x + \frac{\pi}{4}\right)$$



$$15) f(x) = \frac{1}{3} \tan\left(\frac{1}{2}x - \frac{2\pi}{3}\right)$$

