

FORMULE

FI. Vektori

FII. Pravci i ravnine

FIII. Funkcije

FIV. Granična vrijednost i neprekinutost

FV. Derivacije

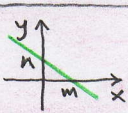
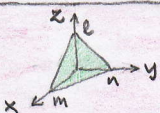
FI. Vektori

Oznake i koordinatni prikazi		
	vektor $\vec{a} = a_x \vec{i} + a_y \vec{j} + a_z \vec{k}$	duljina $a = \sqrt{a_x^2 + a_y^2 + a_z^2}$
točke $A(x_A, y_A, z_A)$ $B(x_B, y_B, z_B)$	radius-vektor točke A $\vec{r}_A = \vec{OA} =$ $= x_A \vec{i} + y_A \vec{j} + z_A \vec{k}$	vektor s početkom A i završetkom B $\vec{AB} = \vec{r}_B - \vec{r}_A =$ $= (x_B - x_A) \vec{i} + (y_B - y_A) \vec{j} + (z_B - z_A) \vec{k}$

umnožak	skalarni	vektorski	mješoviti
oznaka	$\vec{a} \cdot \vec{b}$	$\vec{a} \times \vec{b}$	$(\vec{a} \times \vec{b}) \cdot \vec{c}$
koordinatna formula	$a_x b_x + a_y b_y + a_z b_z$	$\begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ a_x & a_y & a_z \\ b_x & b_y & b_z \end{vmatrix}$	$\begin{vmatrix} a_x & a_y & a_z \\ b_x & b_y & b_z \\ c_x & c_y & c_z \end{vmatrix}$

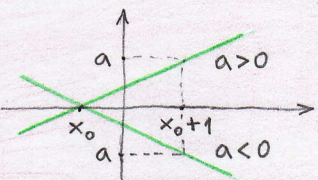
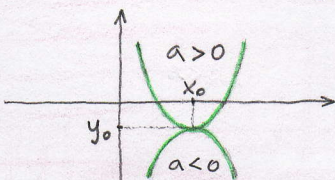
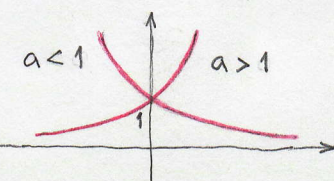
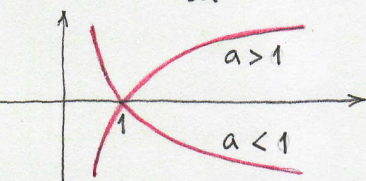
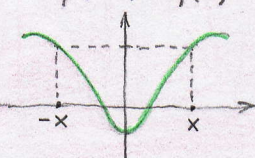
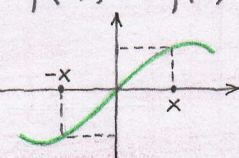
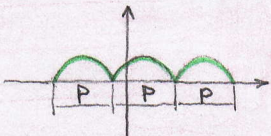
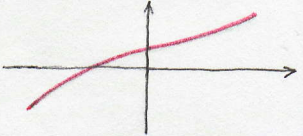
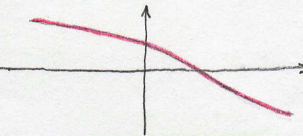
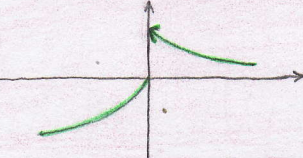
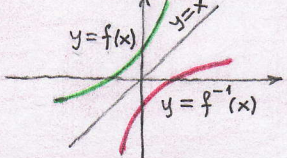
projekcija \vec{a} na \vec{b}	skalarna	vektorska
oznaka i prikazi	$\bar{b}_a = a \cos \varphi = \frac{\vec{a} \cdot \vec{b}}{b}$	$\vec{b}_a = \bar{b}_a \vec{b}^0 = \frac{\vec{a} \cdot \vec{b}}{b^2} \vec{b}$

FII. Pravci i ravnine

	pravac	ravnina
odredbeni elementi	točka $T_0(x_0, y_0, z_0)$ usporodni vektor $\vec{s} = a\vec{i} + b\vec{j} + c\vec{k}$	točka $T_0(x_0, y_0, z_0)$ okomiti vektor $\vec{n} = A\vec{i} + B\vec{j} + C\vec{k}$
kanonska jednačina	$\frac{x-x_0}{a} = \frac{y-y_0}{b} = \frac{z-z_0}{c}$	$A(x-x_0) + B(y-y_0) + C(z-z_0) = 0$
segmentna jednačina	pravac u ravnini $\frac{x}{m} + \frac{y}{n} = 1$ 	$\frac{x}{m} + \frac{y}{n} + \frac{z}{l} = 1$ 

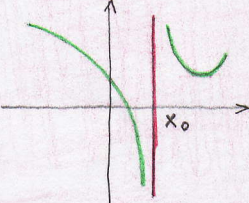
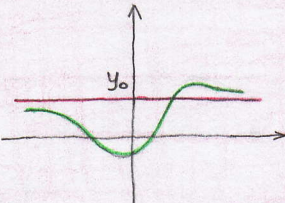
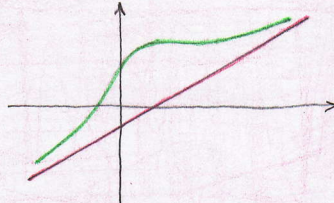
kut	dvaju pravaca	dviju ravnina	pravca i ravnine
formula	$\cos \varphi = \frac{ \vec{s}_1 \cdot \vec{s}_2 }{s_1 s_2}$	$\cos \varphi = \frac{ \vec{n}_1 \cdot \vec{n}_2 }{n_1 n_2}$	$\sin \varphi = \frac{ \vec{s} \cdot \vec{n} }{sn}$

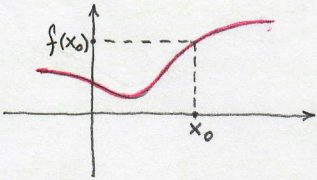
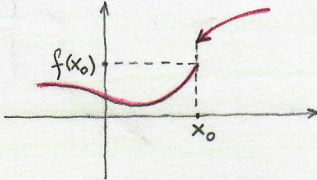
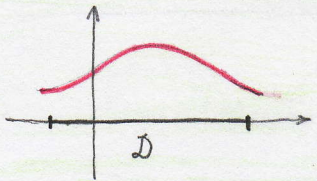
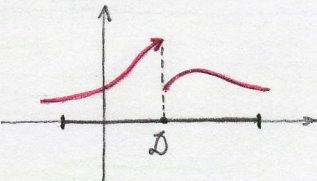
FIII. Funkcije

<p>linearna</p> <p>$f(x) = ax + b = a(x - x_0)$, $a \neq 0$</p> 		<p>kvadratna</p> <p>$f(x) = ax^2 + bx + c = a(x - x_0)^2 + y_0$, $a \neq 0$</p> 	
<p>eksponencijalna</p> <p>$f(x) = \exp_a x = a^x$, $a > 0, a \neq 1$</p> 		<p>logaritamska</p> <p>$f(x) = \log_a x$, $a > 0, a \neq 1$</p> 	
<p>parna</p> <p>$f(-x) = f(x)$</p> 	<p>neparna</p> <p>$f(-x) = -f(x)$</p> 	<p>periodična</p> <p>$f(x+p) = f(x)$</p> 	
<p>rastuća</p> <p>$x_1 < x_2 \Rightarrow f(x_1) < f(x_2)$</p> 		<p>padajuća</p> <p>$x_1 < x_2 \Rightarrow f(x_1) > f(x_2)$</p> 	
<p>injektivna</p> <p>$x_1 \neq x_2 \Rightarrow f(x_1) \neq f(x_2)$</p> 		<p>inverzna</p> <p>$f(x)$ injektivna $\Rightarrow f^{-1}(f(x)) = x$</p> 	

FIV. Granična vrijednost i neprekinutost

Granična vrijednost funkcije	
osnovna računrska pravila	osnovni limesi
$\lim_{x \rightarrow x_0} [f(x) \pm g(x)] = \lim_{x \rightarrow x_0} f(x) \pm \lim_{x \rightarrow x_0} g(x)$	$\lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} = e$
$\lim_{x \rightarrow x_0} [f(x) \cdot g(x)] = \left[\lim_{x \rightarrow x_0} f(x) \right] \cdot \left[\lim_{x \rightarrow x_0} g(x) \right]$	$\lim_{x \rightarrow 0} \frac{a^x - 1}{x} = \ln a$
$\lim_{x \rightarrow x_0} \left[\frac{f(x)}{g(x)} \right] = \frac{\lim_{x \rightarrow x_0} f(x)}{\lim_{x \rightarrow x_0} g(x)}$	$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$

Asimptote grafa funkcije		
okomita	usporodna	kosa
$x = x_0$ $\lim_{x \rightarrow x_0} f(x) = \pm \infty$	$y = y_0$ $\lim_{x \rightarrow \pm \infty} f(x) = y_0$	$y = ax + b, a \neq 0$ $\lim_{x \rightarrow \pm \infty} f(x) = a, \lim_{x \rightarrow \pm \infty} [f(x) - ax] = b$
		

Neprekinutost i prekinutost funkcije	
neprekinuta u točki x_0	prekinuta u točki x_0
$\lim_{x \rightarrow x_0} f(x) = f(x_0)$	$\lim_{x \rightarrow x_0} f(x) \neq f(x_0)$ ili ne postoji
	
neprekinuta na području D	prekinuta na području D
	

FV. Derivacije

prirast	derivacija	diferencijal
$\Delta y = \Delta f(x)$ $= f(x + \Delta x) - f(x)$	$y' = f'(x)$ $= \lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x}$	$dy = df(x)$ $= f'(x) \Delta x$

računska pravila deriviranja	
$[f(x) \pm g(x)]' = f'(x) \pm g'(x)$ $[c \cdot f(x)]' = c \cdot f'(x)$ $[f(x) \cdot g(x)]' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$ $\left[\frac{f(x)}{g(x)}\right]' = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{[g(x)]^2}$	$[f(g(x))]' = f'(g(x)) \cdot g'(x)$ $[f(g(h(x)))]'$ $= f'(g(h(x))) \cdot g'(h(x)) \cdot h'(x)$

tangenta	normala	kut u sjecištu
$y - y_0 = y'_0 (x - x_0)$	$y - y_0 = -\frac{1}{y'_0} (x - x_0)$	$\tan \varphi_0 = \left \frac{f'(x_0) - g'(x_0)}{1 + f'(x_0) \cdot g'(x_0)} \right $