

A U svakom zadatku dato je više odgovora, a treba zaokružiti tačne odgovore tj. slova ili brojeve ispred tačnih odgovora. U jednom istom zadatku broj tačnih odgovora može biti 0,1,2,3,...,svi. U nekim zadacima ostavljena su prazna mesta za upisivanje odgovora.

• 1) $\lim_{\Delta x \rightarrow 0} \frac{f(x) - f(x + \Delta x)}{\Delta x} = f'(x)$ 2) $\lim_{\Delta x \rightarrow 0} \frac{f(x) - f(x + \Delta x)}{\Delta x} = f'(x)$ 3) $\lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} = f'(x)$
 4) $\lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} = -f'(x)$ 5) $\lim_{\Delta x \rightarrow 0} \frac{f(x) - f(x + \Delta x)}{\Delta x} = -f'(x)$ 6) $\lim_{\Delta x \rightarrow 0} \frac{f(x) - f(x + \Delta x)}{\Delta x} = |f'(x)|$

• Za diferencijabilne funkcije $u = u(x)$ i $v = v(x)$ važi:

1) $(u + 3v)' = u'$ 2) $(u - 3v)' = u' - 3v'$ 3) $(u - v)' = u' - v'$ 4) $(u + 2v)' = u' + 2v'$
 5) $(u \cdot 2v)' = 2u' \cdot v'$ 6) $(2u \cdot 3v)' = 6u' \cdot v'$ 7) $\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}, v \neq 0$ 8) $\left(\frac{2u}{v}\right)' = 2\frac{u'v - uv'}{v^2}, v \neq 0$
 9) $(u \cdot v)' = u' \cdot v + u \cdot v'$ 10) $(3v)' = 3v'$ 11) $\left(\frac{u}{2v}\right)' = \frac{u'v - uv'}{2v^2}, v \neq 0$ 12) $\left(\frac{u \cdot v}{2}\right)' = \frac{u' \cdot v + u \cdot v'}{2}$

• 1) $(3x^5)' = 3x^4$ 2) $(3x^5)' = 15x^4$ 3) $(3x^5)' = \frac{3x^6}{6}$ 4) $(3x^5)' = 6x^6$

• 1) $(-x)' = 1$ 2) $(-x)' = -1$ 3) $(-1)' = -1$ 4) $(-1)' = 0$ 5) $(-5x)' = 5$
 6) $(-5)' = -5$ 7) $(-5^2)' = -10$ 8) $(x^{\frac{1}{2}})' = \frac{1}{2\sqrt{x}}$ 9) $(e^{-x})' = e^{-x}$ 10) $(e^{-x})' = -e^{-x}$

• 1) $(-\sin x)' = -\cos x$ 2) $(\cos x)' = -\sin x$ 3) $(\sin x)' = -\cos x$ 4) $(\cos x)' = \sin x$ 5) $(-\cos x)' = -\sin x$

• 1) $(\ln x)' = \frac{-1}{-x}$ 2) $(\ln x)' = \frac{1}{x^2}$ 3) $(\ln x)' = \frac{2}{x^2}$ 4) $(3 + \ln x)' = \frac{1}{x}$ 5) $(\ln x)' = x^{-1}$

• 1) $(\sqrt[3]{x})' = \frac{1}{3}x^{\frac{2}{3}}$ 2) $(\sqrt[3]{x})' = \frac{1}{3}x^{-\frac{3}{2}}$ 3) $(\sqrt[3]{x})' = \frac{1}{3\sqrt{x^3}}$ 4) $(\sqrt[3]{x})' = \frac{1}{3\sqrt[3]{x^2}}$

• Ako je $x(t) = \sin t$ i $y = \cos t$ tada je:

1) $y'_x = \operatorname{tg} x$ 2) $y'_x = -\operatorname{tg} t$ 3) $y'_x = \operatorname{ctg} t$ 4) $y'_x = -\operatorname{ctg} x$

• Ako je $y = y(x)$ i $\ln y = e^x + x$ tada je:

1) $y'_x = (e^x + x)(e^x + 1)$ 2) $y'_x = e^x + 1$ 3) $y'_x = e^{e^x + x}$ 4) $y'_x = e^{2x} + (x + 1)e^x + x$

• Ako je $y = f(x)$, $y'_x = y' = f'(x)$, $y'_t = \dot{y}$ i $x'_t = \dot{x}$ tada je:

1) $y' = \frac{\dot{x}}{\dot{y}}$ 2) $y' = \frac{\dot{y}}{\dot{x}}$ 3) $\dot{x} = \frac{dx}{dt}$ 4) $y' = \frac{dx}{dy}$ 5) $y' = \frac{dy}{dx}$ 6) $\dot{x} = \frac{dx}{dt}$ 7) $\dot{y} = \frac{dy}{dt}$ 8) $\dot{y} = \frac{dy}{dx}$

• 1) $(\sqrt{x^2 + 2x + 1})' =$ 2) $(\sqrt[3]{\ln(2x)})' =$

3) $(e^{x^2} \sin(4x))' =$ 4) $\left(\frac{x^2 + 1}{e^x}\right)' =$

5) $(\ln x^2)' =$ 6) $(\ln^2 x)' =$

7) $(\cos(\ln x))' =$ 8) $(\sin(e^x))' =$

9) $(\operatorname{arctg}(x^2 - 1))' =$ 10) $(\operatorname{tg}(x - 1)^2)' =$

ZADATAK

Detaljno ispitati funkciju $y = \frac{x^2 - 1}{x}$ i skicirati njen grafik.