

g) $y = 4x^3 - 3x^2$

a) $y' = 12x^2 - 6x$

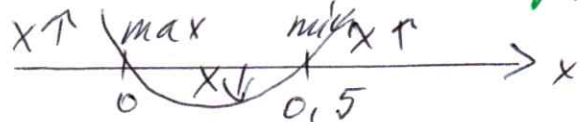
Ekstreemumid tingimus $y' = 0$

$12x^2 - 6x = 0$
 $6x(2x - 1) = 0$

$x_1 = 0$

$2x - 1 = 0 \quad x_2 = 0,5$

Sellest jooimist
 y' piisab
 selgitamiseks



b) $V: x_{max} = 0, \quad x_{min} = 0,5$

$x \uparrow \quad y' > 0$
 $x \downarrow \quad y' < 0$

Tulemused saad a)
 jooimist, aga lihtsasti
 tingimused!

$V: x_1 \uparrow =]-\infty; 0[, \quad x_2 \uparrow =]0,5; \infty[, \quad x \downarrow =]0; 0,5[$

10) $f(x) = x^2 - 2 \ln x + 3$

a) $f(e^{\frac{1}{2}}) = (e^{\frac{1}{2}})^2 - 2 \ln e^{\frac{1}{2}} + 3 = e - 2 \cdot \frac{1}{2} \ln e + 3 = e - 1 + 3 = e + 2$

b) $x \uparrow \quad y' > 0$
 $y' = 2x - \frac{2}{x}$

$2x - \frac{2}{x} = 0 \quad | \cdot x \neq 0$

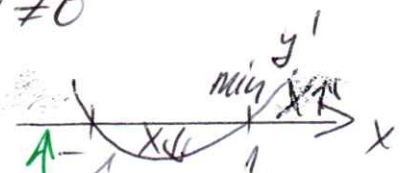
$2x^2 - 2 = 0$

$2(x^2 - 1) = 0$

$x_1 = 1 \quad x_2 = -1$

$x \uparrow =]1; \infty[$

Ära unusta!



ei sobi,
 kuna
 funktsiooni
 määravala piirid
 tänu $\ln x$ on $x =]0; \infty[$

c) $x_{min} = 1$

$y_{min} = f(1) = 1^2 - 2 \ln 1 + 3 = 1 - 0 + 3 = 4$

d) $x^2 - 2 \ln x + 3 = x^2 + \ln^2 x$

$\ln^2 x + 2 \ln x - 3 = 0 \quad \ln x = a$

$a^2 + 2a - 3 = 0$

$a_1 = 1 \Rightarrow \ln x = 1 \Rightarrow x_1 = e$

$a_2 = -3 \Rightarrow \ln x = -3 \Rightarrow x_2 = e^{-3} = \frac{1}{e^3}$

$a_{1,2} = -1 \pm \sqrt{1 + 3}$

Vastus: