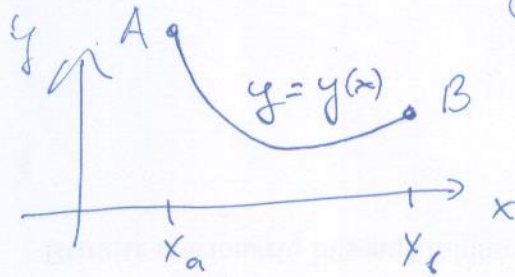


Labortirums darbas (variacionu algoritmai)

1. Brachistochronis uzdevums.

Taskas $A(x_a, y_a)$, $B(x_b, y_b)$.



Rasts kreivē $y = y(x)$, kada
laiks $T(y)$ ya mazāks

$$T(y) = \int_{x_a}^{x_b} \frac{\sqrt{1+(y')^2}}{\sqrt{2g(y_a-y)}} dx$$

2. Nauja koordināciju sistēma.

$$u(\tilde{x}) = y_a - y(x)$$

$$\tilde{x} = x - x_a$$

$$u(0) = 0$$

$$u(\tilde{x}_b) = u_b := y_a - y_b$$

$$T(u) = \int_0^{\tilde{x}_b} \frac{\sqrt{1+(u')^2}}{\sqrt{2gu}} d\tilde{x}$$

Nagrunikome die keles, jurgicenis
A ir B tases, $A = (1, 5)$

a) u_1 -tiese, einanti per A ir B, $B = (3, 1)$

b) u_2 -parabole, einanti per tases
A, C ir B.

$$C = (2, 3)$$

Apskaičiuokite

$T(u_1)$ ir $T(u_2)$, imkime
 $g = 9.8$.

3. Apskaičiuokite optimalų kelių -
ciklo idę, kurį jurgia tases A ir B

Kiek tada laiko $T(u^*)$ jada keles

$$\tilde{x} = c_1 (2t - \sin 2t)$$

$$u = c_1 (1 - \cos 2t)$$
