Course outline

Assignment 2

The due date for submitting this assignment has passed.

Due on 2021-02-07, 23:59 IST.

As per our records you have not submitted this assignment.

1) Assuming fixed end-points, Then which of the following is the extremals of the functional *1 point*

$$F\{y\} = \int \sqrt{x^2 + y^2}\,\sqrt{1 + y'^2}\,dx$$

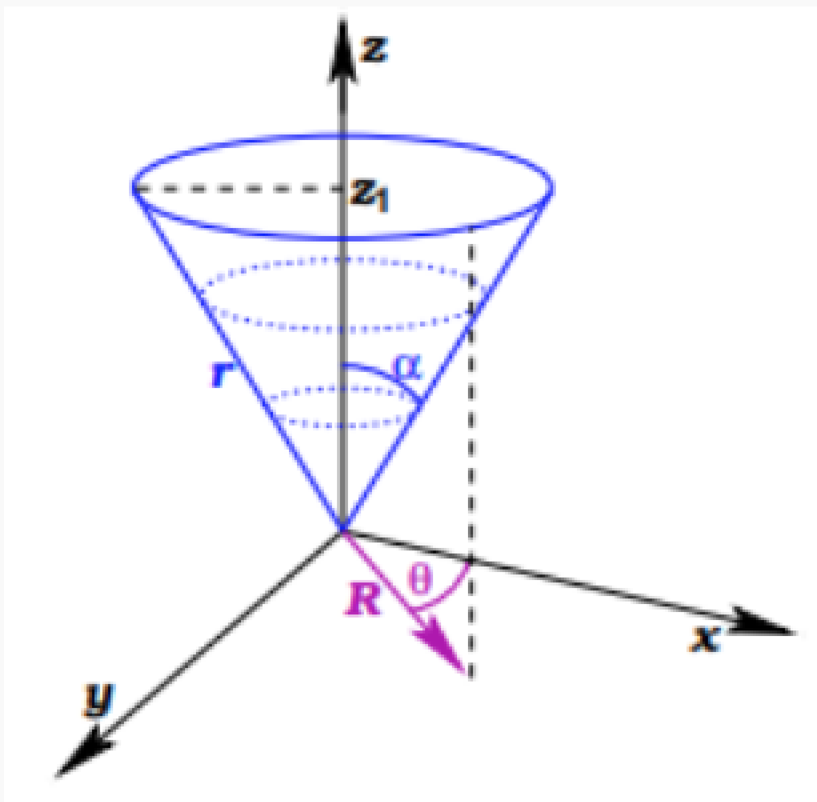
where α and β are arbitrary constants

- $2xy \sin\alpha - (x^2 - y^2)\cos\beta = \alpha$
- $2xy \sin\alpha + (x^2 - y^2)\cos\alpha = \beta$
- $2xy \cos\alpha + (x^2 - y^2)\sin\alpha = \beta$
- $y(x) = x\tan\alpha \pm \sqrt{x^2\sec^2\alpha + \beta\sec\alpha}$
- $y(x) = x\tan\alpha \pm \sqrt{x^2\sec^2\alpha - \beta\sec\alpha}$
- $y(x) = x\tan\alpha \pm \sqrt{x^2\sec^2\alpha - \beta\sec\beta}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$2xy \sin\alpha + (x^2 - y^2)\cos\alpha = \beta$
$y(x) = x\tan\alpha \pm \sqrt{x^2\sec^2\alpha - \beta\sec\alpha}$

2) Which of the following is the geodesics on a right circular cone (as shown in the figure) *1 point*



- $r = \csc(\nu + \theta\sin\alpha)$
- $r = \nu\csc(\nu + \theta\sin\alpha)$
- $r = \mu\csc(\nu - \theta\sin\alpha)$
- $r = \mu\csc(\nu + \theta\sin\alpha)$
- $r = \nu\csc(\mu + \theta\sin\alpha)$
- $r = \nu\csc(\mu - \theta\sin\alpha)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$r = \mu\csc(\nu - \theta\sin\alpha)$

3) If we minimize *1 point*

$$I = \int_a^b \left[(y')^2 - y^2\right] dx$$

Then which of the following option is/are correct

- $y = \pm\sqrt{-c}\sin x, c < 0$
- $y = \pm\sqrt{c}\sin x, c > 0$
- $y = \pm\sqrt{-c}\cos x, c < 0$
- $y = \pm\sqrt{c}\cos x, c > 0$
- $y = \pm\sqrt{-c}\tan x, c < 0$
- $y = \pm\sqrt{c}\tan x, c > 0$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$y = \pm\sqrt{-c}\sin x, c < 0$