Assignment 5

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

1) Minimize

\[
I = \int_{x_1}^{x_2} \left[ y^2 - (y')^2 \right] dx
\]

with left and point fixed and \( y(x_1) \) is along the curve

\[ x_1 = \frac{x}{2} \]

- \( y = 0 \)
- \( y = 1 \)
- \( y = x \)
- \( y = y + 1 \)
- \( y = y^2 - 1 \)
- \( y = y^2 + 1 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( y = 0 \)

2) Find the extremals for

\[
I = \int_{x_1}^{x_2} \left[ \frac{1}{2}y^2 + y'y' + y' + y \right] dx
\]

where and values of \( y \) are free

- \( y = \frac{1}{2}x + \frac{2}{3} + \frac{1}{3}x^2 \)
- \( y = \frac{1}{3}x + \frac{1}{2} + \frac{1}{3}x^2 \)
- \( y = \frac{3}{2}x + \frac{2}{3} + \frac{1}{2}x^2 \)
- \( y = \frac{3}{2}x + \frac{1}{2} + \frac{1}{3}x^2 \)
- \( y = \frac{3}{2}x + \frac{1}{2} + \frac{3}{2}x^2 \)
- \( y = \frac{3}{2}x + \frac{1}{3} + \frac{1}{2}x^2 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( y = -\frac{1}{2}x^2 + \frac{1}{2} + \frac{1}{2}x^2 \)

3) Solve the Euler-Lagrange equation associated with

\[
I = \int_{x_1}^{x_2} \left[ y' - (y')^2 \right] dx
\]

- \( \text{arcosh} \ \frac{x}{\sqrt{c_1}} + c_2 = \pm y \)
- \( \text{arcosh} \ \frac{y}{\sqrt{c_1}} + c_2 = \pm x \)
- \( \text{arcosh} \ \frac{x}{\sqrt{c_1}} + c_2 = \pm x \)
- \( \text{arcosh} \ \frac{y}{\sqrt{c_1}} + c_2 = \pm y \)
- \( \text{artanh} \ \frac{x}{\sqrt{c_1}} + c_2 = \pm x \)
- \( \text{artanh} \ \frac{y}{\sqrt{c_1}} + c_2 = \pm y \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( \text{arcosh} \ \frac{x}{\sqrt{c_1}} + c_2 = \pm x \)