Assignment 2

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) Lagrangian of a free particle in cylindrical coordinates is

\[ L = \frac{1}{2} m \left( \dot{r}^2 + \dot{\varphi}^2 + \frac{1}{\rho} \dot{\varphi}^2 \right) + \frac{1}{2} m \dot{z}^2 \]

Which of the following is NOT a cyclic coordinate?

- \( r \)
- \( \varphi \)
- \( \rho \)
- \( z \)

No, the answer is incorrect.

Score: 0
Accepted Answers:

2) Lagrangian of a system is given by

\[ L = \frac{1}{2} m (\dot{\theta}^2 + \dot{\varphi}^2) + \frac{1}{2} m \dot{\varphi}^2 (\dot{\theta} - \dot{\varphi}) \]

Re-express the Lagrangian using the following transformation

\[ p_1 = \frac{1}{\sqrt{m}} Q_1, \quad p_2 = \frac{1}{\sqrt{m}} Q_2 \]

Which of the following is a cyclic coordinate?

- \( Q_1 \)
- \( Q_2 \)
- \( Q_1 + Q_2 \)
- \( Q_1 - Q_2 \)

No, the answer is incorrect.

Score: 0
Accepted Answers: