

Unit 7 - Week 5

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Classical Mechanics: L28: one dimensional systems

Classical Mechanics: L29: Two-body problem

Classical Mechanics: L30: Two-body problem, Kepler's second law

Classical Mecahnics: L31: Two-body problem, Kepler problem

Classical Mecahnics: L31: Two-body problem, Conic Sections in Polar Coordinates

Classical Mechanics: Two-body problem, Ellipse in polar coordinates

Quiz : Assignment 5

Week 5 Feedback Form : Introduction to Classical Mechanics

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Live session

Video Download

Assignment 5

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

Due on 2020-10-21, 23:59 IST.

1) A one dimensional system is oscillating around its equilibrium position in the potential $U = \alpha q^4$ where $\alpha > 0$. If T is the time period when the system has total energy E , then upon increasing the energy to $2E$, the time period will **6 points**

- increase by a factor of $2^{1/4}$
- increase by a factor of $2^{1/2}$
- decrease by a factor of $\frac{1}{2^{1/4}}$
- decrease by a factor of $\frac{1}{2^{1/2}}$

No, the answer is incorrect.
Score: 0

Accepted Answers:

decrease by a factor of $\frac{1}{2^{1/4}}$

2) A one dimensional system that is described by a potential energy $U(q)$ is shown in the figure. The turning points for $E = E_1$ are at **2 points**

- q_1, q_2, q_3, q_4
- q_0, q_5

No, the answer is incorrect.
Score: 0

Accepted Answers:

q_1, q_2, q_3, q_4

3) A one dimensional system that is described by a potential energy $U(q)$ is shown in the figure. Which of the following statements are correct **2 points**

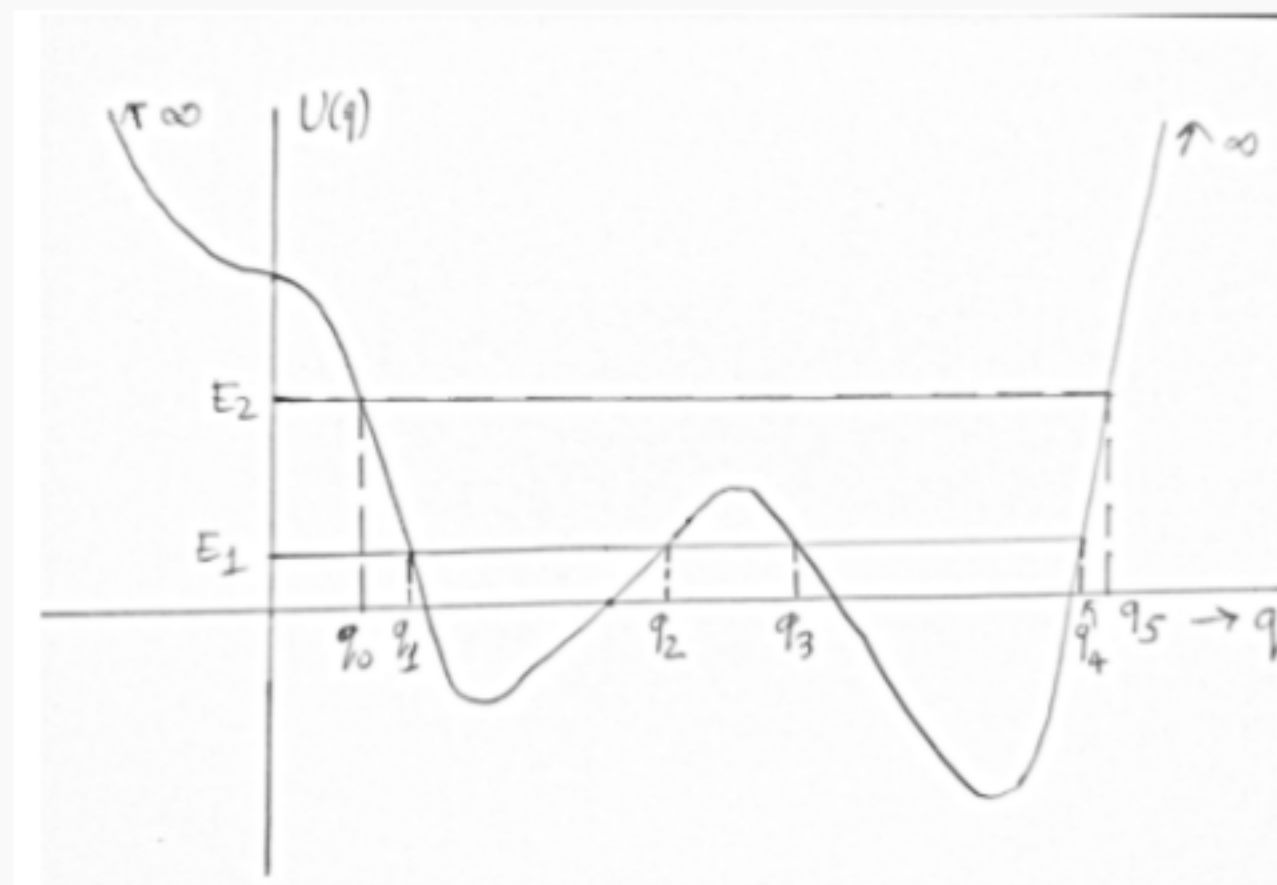


Figure 1: Potential energy diagram for a one dimensional system

- In region $q_2 < q < q_3$ kinetic energy would be negative if the system has energy equal to E_1
- In region $q < q_0$ system would have imaginary velocity if its energy is equal to E_2

No, the answer is incorrect.
Score: 0

Accepted Answers:

In region $q_2 < q < q_3$ kinetic energy would be negative if the system has energy equal to E_1

In region $q < q_0$ system would have imaginary velocity if its energy is equal to E_2