

Unit 11 - Week 9

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Classical Mechanics: First integrals of a heavy symmetric top

Classical Mechanics: Nutation and Precision of a heavy symmetric top

Sleeping Top

Rotating Frames. Euler Equations

Quiz : Assignment 9

Week 9 Feedback Form : Introduction to Classical Mechanics

Week 10

Week 11

Week 12

Live session

Video Download

Assignment 9

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

Due on 2020-11-18, 23:59 IST.

1) How many independent elements a 4×4 symmetric matrix has

2 points

- 6
 8
 10
 12

No, the answer is incorrect.
Score: 0

Accepted Answers:
10

2) How many independent elements a 4×4 anti-symmetric matrix has

2 points

- 3
 6
 9
 12

No, the answer is incorrect.
Score: 0

Accepted Answers:
6

3) If a rigid body undergoes a change in orientation that is described by a matrix A which is given by

6 points

$$A = \frac{1}{3} \begin{pmatrix} -2\sqrt{2} & 0 & 1 \\ \frac{1}{\sqrt{2}} & \frac{3}{\sqrt{2}} & 2 \\ -\frac{1}{\sqrt{2}} & \frac{3}{\sqrt{2}} & -2 \end{pmatrix}$$

then, which of the following vectors gives the direction of the axis about which a rotation will produce the same final orientation?

Hint: A vector that is along the direction of rotation axis will remain unchanged after the rotation. That is such a vector would be an eigenvector of A . Suggestion: Use Mathematica to do this problem.

- $(3 - 2\sqrt{2}, 1 + \sqrt{2}, 1)$

 $(3 + 2\sqrt{2}, 1 + \sqrt{2}, 1)$

 $(2 + 2\sqrt{2}, \sqrt{2}, 1)$

 $(1 + 2\sqrt{2}, \sqrt{2}, 1)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $(3 - 2\sqrt{2}, 1 + \sqrt{2}, 1)$