

Course outline

How does an NPTEL online course work?

Assignment 0

Lecture Material

Week 1

Week 2

Week 3

- Lecture 14 : 2D flows - linear systems

- Lecture 15 : 2D flows - Trajectories: spirals, star and degeneracy

- Lecture 16 : Phase portraits - nonlinear systems

- Lecture 17 : 2D phase portraits - limit cycles

- Lecture 18 : Bifurcations and 3D flows

Quiz : Assignment 3

- Feedback Form

Week 4

Week 5

Week 6

Week 7

Week 8

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Detailed Solution

Live Interactive Session

Text Transcripts

Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-02-10, 23:59 IST.

As per our records you have not submitted this assignment.

 1) In python, given vectors of x and y coordinates, which function returns matrices p and q corresponding to a full 2-D grid? **1 point**

- a. [x,y]=meshgrid(p,q)
- b. [x,p]=meshgrid(q,y)
- c. [p,y]=meshgrid(x,q)
- d. [p,q]=meshgrid(x,y)

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
d. [p,q]=meshgrid(x,y)

 2) Which function is used to plot the (u, v) components of a vector field in an (x, y) meshgrid in python environment. **1 point**

- a. streamplot(x, y, u, v)
- b. streamplot(u, v, x, y)
- c. quiver(x, y, u, v)
- d. quiver(u, v, x, y)

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
c. quiver(x, y, u, v)

 3) In a particular example of contour plot in python the command is given as plt.contour(X, Y, F, 11). What does the number 11 signify? **1 point**

- a. Number of X coordinates
- b. Number of Y coordinates
- c. Number of iso-lines of constant F
- d. None of the above

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
c. Number of iso-lines of constant F

 4) In streamplot function in python, which parameter controls the closeness of streamlines? **1 point**

- a. linewidth
- b. density
- c. arrowsize
- d. None of the above

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
b. density

 5) For the given command sol = solve_ivp(mysys, tspan, ics, dense_output=True); what does the last parameter signify? **1 point**

- a. Events to track
- b. Terminate integration
- c. Compute a continuous solution
- d. None of the above

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
c. Compute a continuous solution

 6) For the given command sol = solve_ivp(mysys, tspan, ics,dense_output=True); what is the definition of tspan? **1 point**

- a. Initial time step time
- b. Final time step
- c. Interval of integration
- d. Difference of final time and initial time

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
c. Interval of integration

 7) For the given command streamplot(X, Y, U, V,integration_direction='forward', density=1), X and U are _____ and _____ respectively. **1 point**

- a. 1D array, 1D array
- b. 1D array, 2D array
- c. 2D array, 1D array
- d. 2D array, 2D array

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
b. 1D array, 2D array

 8) For the command streamplot(x,y,u,v,density=1,integration_direction='both'), the number of rows and columns of u must match with the length of _____ and _____, respectively. **1 point**

- a. x and y
- b. y and x
- c. (x-1) and (y-1)
- d. (y-1) and (x-1)

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
b. y and x

 9) Which library is used to plot a 3D figure in python using the mlab.plot3d function? **1 point**

- a. ipywidgets
- b. numpy
- c. matplotlib
- d. mayavi

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
d. mayavi

 10) In the solve.ivp function of python which input parameter defines the times at which to store the computed solution? **1 point**

- a. t_span
- b. t_eval
- c. events
- d. args

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
b. t_eval