

## Lecture 12 Activity Results for Test Student

Score for this attempt: **1** out of 1  
Submitted Feb 15 at 8:53am  
This attempt took 3 minutes.

Question 1

1 / 1 pts

Consider the BVP
$$\begin{cases} u_{xx} = \sum_{n=1}^{\infty} e^{-n} \sin\left(\frac{n\pi}{L}x\right), & x \in (0, L) \\ u(0) = 0, \quad u(L) = 0 \end{cases}.$$

What is the solution?

Correct!

☐  $u(x) = \sum_{n=1}^{\infty} \frac{1}{\left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐  $u(x) = \sum_{n=1}^{\infty} \frac{1}{1 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☒  $u(x) = -\sum_{n=1}^{\infty} \frac{1}{\left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐ The BVP has a solution but it is none of the expressions listed.

☐ The BVP does not have a solution.

Additional Comments:

Question 2

0 / 0 pts

Consider the BVP
$$\begin{cases} u_{xx} = 3u - \sum_{n=1}^{\infty} e^{-n} \sin\left(\frac{n\pi}{L}x\right), & x \in (0, L) \\ u(0) = 0, \quad u(L) = 0 \end{cases}.$$

What is the solution?

Correct!

☐  $u(x) = \sum_{n=1}^{\infty} \frac{1}{\left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐  $u(x) = -\sum_{n=1}^{\infty} \frac{1}{3 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☒  $u(x) = \sum_{n=1}^{\infty} \frac{1}{3 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐ The BVP has a solution but it is none of the expressions listed.

☐ The BVP does not have a solution.

Additional Comments:

Question 3

0 / 0 pts

Consider the BVP
$$\begin{cases} u_{xx} + u_{yy} = -\sin\left(\frac{\pi}{H}y\right) \sum_{n=1}^{\infty} e^{-n} \sin\left(\frac{n\pi}{L}x\right), \\ \qquad \qquad \qquad (x, y) \in (0, L) \times (0, H) \\ y(0, y) = 0, \quad y(L, y) = 0 \\ y(x, 0) = 0, \quad y(x, H) = 0 \end{cases}.$$

What is the solution?

Correct!

☐  $u(x, y) = \sin\left(\frac{\pi}{H}y\right) \sum_{n=1}^{\infty} \frac{1}{1 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐  $u(x, y) = -\sin\left(\frac{\pi}{H}y\right) \sum_{n=1}^{\infty} \frac{1}{\left(\frac{\pi}{H}\right)^2 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☒  $u(x, y) = \sin\left(\frac{\pi}{H}y\right) \sum_{n=1}^{\infty} \frac{1}{\left(\frac{\pi}{H}\right)^2 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐ The BVP has a solution but it is none of the expressions listed.

☐ The BVP does not have a solution.

Additional Comments:

Question 4

0 / 0 pts

Consider the BVP
$$\begin{cases} u_{xx} + u_{yy} = -\sum_{n=1}^{\infty} e^{-n} \sin\left(\frac{n\pi}{L}x\right), \\ \qquad \qquad \qquad (x, y) \in (0, L) \times (0, H) . \\ y(0, y) = 0, \quad y(L, y) = 0 \\ y(x, 0) = 0, \quad y(x, H) = 0 \end{cases}$$

What is the solution?

Correct!

☐  $u(x, y) = \sum_{n=1}^{\infty} \frac{1}{\left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐  $u(x, y) = -\sum_{n=1}^{\infty} \frac{1}{\left(\frac{\pi}{H}\right)^2 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☐  $u(x, y) = \sum_{n=1}^{\infty} \frac{1}{\left(\frac{\pi}{H}\right)^2 + \left(\frac{n\pi}{L}\right)^2} e^{-n} \sin\left(\frac{n\pi}{L}x\right)$

☒ The BVP has a solution but it is none of the expressions listed.

☐ The BVP does not have a solution.

Additional Comments:

Question 5

0 / 0 pts

Consider the BVP  $\begin{cases} u_{xx} = -2, & x \in (0, L) \\ u_x(0) = 0, \quad u_x(L) = 0 \end{cases}.$

Be careful about the BCs. What is the solution?

Correct!

☐  $u(x) = -x^2$

☐  $u(x) = -(L-x)^2$

☐  $u(x) = x(L-x)$

☐ The BVP has a solution but it is none of the expressions listed.

☒ The BVP does not have a solution.

Additional Comments:

Question 6

0 / 0 pts

Consider the BVP  $\begin{cases} u_{xx} = -\sin\left(\frac{\pi}{L}x\right), & x \in (0, L) \\ u_x(0) = 0, \quad u_x(L) = 0 \end{cases}.$

Be careful about the BCs. What is the solution?

Correct!

☐  $u(x) = \frac{L^2}{(\pi)^2} \sin\left(\frac{\pi}{L}x\right)$

☐  $u(x) = \frac{L}{\pi} \cos\left(\frac{\pi}{L}x\right)$

☐  $u(x) = \frac{L}{\pi} \left(\cos\left(\frac{\pi}{L}x\right) - 1\right)$

☐ The BVP has a solution but it is none of the expressions listed.

☒ The BVP does not have a solution.

Additional Comments:

Question 7

0 / 0 pts

Consider the BVP  $\begin{cases} u_{xx} = -\sin\left(\frac{\pi}{L}x\right), & x \in (0, L) \\ u_x(0) = 0, \quad u(L) = 0 \end{cases}.$

Be careful about the BCs. What is the solution?

Correct!

☐  $u(x) = \frac{L^2}{(\pi)^2} \sin\left(\frac{\pi}{L}x\right)$

☐  $u(x) = \frac{L}{\pi} \cos\left(\frac{\pi}{L}x\right)$

☐  $u(x) = \frac{L}{\pi} \left(\cos\left(\frac{\pi}{L}x\right) + 1\right)$

☒ The BVP has a solution but it is none of the expressions listed.

☐ The BVP does not have a solution.

Additional Comments:

Question 8

0 / 0 pts

Consider the BVP  $\begin{cases} u_{xx} = u - 2, & x \in (0, L) \\ u_x(0) = 0, \quad u_x(L) = 0 \end{cases}.$

Be careful about the BCs and the RHS of ODE. What is the solution?

Correct!

☐  $u(x) = -x^2$

☐  $u(x) = -(L-x)^2$

☐  $u(x) = x(L-x)$

☒  $u(x) = 2$

☐ The BVP has a solution but it is none of the expressions listed.

☐ The BVP does not have a solution.

Additional Comments:

Fudge Points:

You can manually adjust the score by adding positive or negative points to this box.

Final Score: **1** out of 1 

Update Scores

Here's the latest quiz results for Test Student. You can modify the points for any question and add more comments, then click "Update Scores" at the bottom of the page.

### Quiz Submissions

#### Attempt 1: 1

Test Student has 1 attempt left

Allow this student an extra attempt

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