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|  | Lecture Notes | 18th July 2023 |

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* Sturm-Liouville

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**Theory**:

An elementary Sturm-Liouville (SL) problem is

when is a function on and is a scalar.

We are looking for 2 things:

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**Remark:**

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**SL with boundary condition (BC):**

1. **Dirichlet BC** for on
2. **Neumann BC** for on
3. **Periodic BC** for on
4. **Mixed BC** for on
5. **Dirichlet BC** for :

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Now, there are 3 cases

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1. **Neumann BC** for :
2. **Periodic BC** for :
3. **Mixed BC** for :

**Solve the following**:

Example 1:

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Example 2:

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Example 3:

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**Solve the following**:

Example 1:

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Example 2:

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Example 3:

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