Unit 12 - Week 11

Assignment 11

The due date for submitting this assignment has passed.
3 points

Due on 2019-10-16, 23:59 IST.

1. The transform that will reduce the linear homogeneous, fractional differential equation

\[ \frac{2}{\Gamma(1-k)} \frac{d^k}{dx^k} u(x) + a(x) u(x) = 0, \quad x \in R, \]

is an algebraic equation in the transformed plane, \( \mathcal{L} \).

Laplace — \( \mathcal{L} \)
Fourier — \( \mathcal{L} \)
Hankel — \( \mathcal{L} \)
Helmholtz — \( \mathcal{L} \)

2. The transformed solution \( \tilde{u} \) is

\[ \tilde{u}(s) = \frac{1}{s^2 + \alpha} \]

Laplace — \( \mathcal{L} \)
Fourier — \( \mathcal{L} \)
Hankel — \( \mathcal{L} \)
Helmholtz — \( \mathcal{L} \)

No, the answer is incorrect.

3. The transformed solution of the linear homogeneous, fractional Burgers equation

\[ \frac{\partial^k}{\partial t^k} u(x,t) + \alpha \frac{\partial}{\partial x} \left( \frac{\partial^k}{\partial t^k} u(x,t) \right) = 0, \quad x \in R, \]

is a constant and \( \alpha > 0 \) and \( t > 0 \).

Laplace — \( \mathcal{L} \)
Fourier — \( \mathcal{L} \)
Hankel — \( \mathcal{L} \)
Helmholtz — \( \mathcal{L} \)

No, the answer is incorrect.

4. The transform's used to obtain the above form of solution is

Laplace — \( \mathcal{L} \)
Fourier — \( \mathcal{L} \)
Hankel — \( \mathcal{L} \)
Helmholtz — \( \mathcal{L} \)

No, the answer is incorrect.

5. The transformed solution of the linear homogeneous, fractional KdV equation

\[ \frac{\partial^k}{\partial t^k} u(x,t) = \alpha \frac{\partial^2}{\partial x^2} \left( \frac{\partial^k}{\partial t^k} u(x,t) \right), \quad x \in R, \]

is a constant and \( \alpha > 0 \) and \( t > 0 \).

Laplace — \( \mathcal{L} \)
Fourier — \( \mathcal{L} \)
Hankel — \( \mathcal{L} \)
Helmholtz — \( \mathcal{L} \)

No, the answer is incorrect.

6. The transform's used for obtaining the above form of solution is

Laplace — \( \mathcal{L} \)
Fourier — \( \mathcal{L} \)
Hankel — \( \mathcal{L} \)
Helmholtz — \( \mathcal{L} \)

No, the answer is incorrect.

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No, the answer is incorrect.