**Math 2C03_2021 practice problème set #4 (18468905)**

Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

**1.** Question Details ZillDiffEQ9 4.1.010. [3894050]

Find the largest interval centered about $x = 0$ for which the given initial-value problem has a unique solution. (Enter your answer using interval notation.)

$$y'' + (\tan(x))y = e^x, \quad y(0) = 1, \quad y'(0) = 0$$

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**2.** Question Details ZillDiffEQ9 4.1.026. [3876436]

Consider the differential equation

$$4y'' - 4y' + y = 0; \; e^{x/2}, \; xe^{x/2}.$$

Verify that the functions $e^{x/2}$ and $xe^{x/2}$ form a fundamental set of solutions of the differential equation on the interval $(-\infty, \infty)$.

The functions satisfy the differential equation and are linearly independent since

$W(e^{x/2}, xe^{x/2}) =$ ____ $\neq 0$ for $-\infty < x < \infty$.

Form the general solution.

$y =$ ____

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**3.** Question Details ZillDiffEQ9 4.3.001. [4568012]

Find the general solution of the given second-order differential equation.

$$2y'' + y' = 0$$

$y(x) =$ ____

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**4.** Question Details ZillDiffEQ9 4.3.003. [3894208]

Find the general solution of the given second-order differential equation.

$y'' - y' - 30y = 0$

$y(x) =$

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**5.** Question Details ZillDiffEQ9 4.3.005.MI. [4568271]

Find the general solution of the given second-order differential equation.

$y'' + 10y' + 25y = 0$

$y(x) =$

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**6.** Question Details ZillDiffEQ9 4.3.007. [4568019]

Find the general solution of the given second-order differential equation.

$20y'' - 11y' - 3y = 0$

$y(x) =$

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**7.** Question Details ZillDiffEQ9 4.3.015. [3894152]

Find the general solution of the given higher-order differential equation.

$y''' - 2y'' - 3y' = 0$

$y(x) =$

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**8.** Question Details ZillDiffEQ9 4.3.017. [4568236]

Find the general solution of the given higher-order differential equation.

$y''' - 9y'' + 15y' + 25y = 0$

$y(x) =$

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**9.** Question Details ZillDiffEQ9 4.3.018. [4568044]

Find the general solution of the given higher-order differential equation.

$$y''' + 4y'' - 4y' - 16y = 0$$

$y(x) =$

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**10.** Question Details ZillDiffEQ9 4.3.031.EP. [4903663]

Consider the following initial-value problem.

$$\frac{d^2y}{dt^2} - 4\frac{dy}{dt} - 5y = 0, \quad y(1) = 0, y'(1) = 7$$

Find all the roots of the auxiliary equation. (Enter your answer as a comma-separated list.)

Solve the given initial-value problem.

$y(t) =$

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**11.** Question Details ZillDiffEQ9 4.3.032. [4568309]

Solve the given initial-value problem.

$$4y'' - 4y' - 3y = 0, \ y(0) = 1, \ y'(0) = 7$$

$y(x) =$

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**12.** Question Details ZillDiffEQ9 4.3.049. [3745287]

Find a homogeneous linear differential equation with constant coefficients whose general solution is given.

$y = c_1e^x + c_2e^{3x}$

- $y'' - 2y' - 3y = 0$
- $y'' - 4y' + 3y = 0$
- $y'' + 4y' + 3y = 0$
- $y'' - 3y = 0$
- $y'' + 2y' - 3y = 0$

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Assignment Details

Name (AID): **Math 2C03_2021 practice problème set #4 (18468905)**
Submissions Allowed: **20**
Category: **Homework**
Code:
Locked: **Yes**
Author: **Lia Bronsard (** bronsard@mcmaster.ca **)**
Last Saved: **Feb 3, 2021 10:04 AM EST**
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