## **Matthew Mendoza** Assignment Math45-Module-11-Exercises due 10/22/2020 at 11:59pm PDT

Math-45-Krauel-F20

Which of the following best describes the purpose of 'reduction of order'?

- A. Given one solution of a 2nd-order homogeneous linear differential equation, find another (linearly independent) solution.
- B. Given two solutions of a 2nd-order homogeneous linear differential equation, determine whether they are linearly indepedndent.
- C. Determine whether a linear differential eqution is homogeneous or nonhomogeneous.
- **2.** (1 point)

Consider the differential equation y'' - y = 0, and suppose we know that  $y_1 = e^x$  is a solution.

(a) For our differential equation, what is the function P(x) with it in the form y'' + P(x)y' + Q(x)y = 0? [Choose/0/1/-1]

(b) Plugging in P and  $y_1$  into  $y_1 \int \frac{e^{-\int Pdx}}{(y_1)^2} dx$  gives (after manipulating the constant) [Choose/A/B/C], where

B. 
$$e^x \int \frac{e^{-\int e^x dx}}{e^{x^2}} dx$$
 C.  $e^x \int \frac{c_1}{e^{2x}} dx$ 

$$C. e^x \int \frac{c_1}{e^{2x}} dx$$

(c) Solving the integral from part (b) gives (after manipulating the constant) [Choose/A/B/C], where

B. 
$$c_1 e^{-x} + c_2 e^x$$
 C.  $e^{-x}$ 

$$C. e^{-1}$$

(d) We deduce that the second solution can be taken to be [Choose/A/B/C], where

$$B.y_2 = xe$$

$$B.y_2 = xe^x$$
  $C. y_2 = e^{-x}$ 

**3.** (1 point)

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Enter a value for  $\pi$ 

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