Name: ID #: Section #:

(Q1) Find a linear differential operator that annihilates that the function $(e^{-x}\sin x - e^{2x}\cos x)$

(Q2) Use variation of parameters to solve $y'' + 3y' + 2y = \dfrac{1}{1+e^x}$.

(Q3) Solve the Cauchy-Euler equation $x^2y'' + xy' - y = \ln x$.

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(Q1) Determine the form of particular solution for $y'' + 2y' + y = x^2 e^{-x}$.

(Q2) Use variation of parameters to solve $2y'' + 2y' + y = 4\sqrt{x}$.

(Q3) Solve the Cauchy-Euler equation $x^2y'' + 10xy' + 8y = x^2$.