Name: _____ ID #: _____ Section: 03

Q1 (*2 Pts*) Find a linear differential operator that annihilates the given function.

a) $x + 5x^2 e^{2x}$

b) $e^{-x} \sin x - e^{2x} \cos x$

Q2 (*4 Pts*) Solve the DE: $y'' + 16y = 6 \sin x + 3 \cos x$ using the ***undetermined coefficients***.

Q3. (*4 pts*) Use ***variation of parameters*** to solve the DE:

$$y'' - 2y' + y = \frac{e^x}{1 + x^2}$$