09.29.2014, Question 1: We are testing the function $f(x)=C_0e^{2x}+C_1e^{-2x}$ as a possible solution to a DE. After we substitute the function and its derivative into the DE we get $2C_0e^{2x}-2C_1e^{-2x}=-2(C_0e^{2x}+C_1e^{-2x})+3e^{2x}$. What value of C_0 will allow this function to work as a solution?

(a) $C_0 = \frac{3}{4}$ (c) $C_0 = 3$ (e) Any value of C_0 will work.

(b) $C_0 = \frac{3}{2}$ (d) $C_0 = 2$ (f) No value of C_0 will work.

09.29.2014, Question 2: When we have $\boldsymbol{y'=7y+2x}$ we should conjecture $\boldsymbol{y=C_0e^{7x}+C_1x+C_2}$. Why include the $\boldsymbol{C_2}$?

(a) Because the $7y$ becomes a constant 7 when we take the derivative and we need a term to cancel this out.

(b) Because when we take the derivative of C_1x we get a constant C_1 and we need a term to cancel this out.

(c) Because this will allow us to match different initial conditions.

(d) This does not affect the equation because it goes away when we take the derivative.

09.29.2014, Question 3: We have the equation ***y'=2y+sin(3t).*** What should our conjecture for ***y(t)*** be?

(a) $y = C_0 e^{2t} + \sin 3t$

(b) $y = C_0 e^{2t} + \sin 3t + \cos 3t$

(c) $y = C_0 e^{2t} + C_1 \sin 3t$

(d) $y = C_0 e^{2t} + C_1 \sin 3t + C_2 \cos 3t$

(e) $y = C_0 e^{2t} + C_1 e^{-2t} + C_2 \sin 3t + C_3 \cos 3t$

(f) None of the above

09.29.2014, Question 4: Which of the following is **NOT** a solution to ***y'(t)=5y+3t***?

(a) $y = 8e^{5t}$

(b) $y = -\frac{3}{5}t - \frac{3}{25}$

(c) $y = 8e^{5t} - \frac{3}{5}t - \frac{3}{25}$

(d) All are solutions.

(e) More than one of (a) - (c) are not solutions.