

B1: Show no work.

a Fnc $x(t) :=$ _____ is the general
soln to $\frac{dx}{dt} = 4x^2t$. [Hint: SoV.] The solution
with $x(1) = 1/5$ is $x(t) :=$ _____.

Total: _____ 195pts

Please PRINT your name and ordinal. Ta:

b Function $h(t)$ satisfies $2h'' + h' - h = 0$,
and initial conditions $h(0) = 7$ and $h'(0) = 2$. So
 $h(t) = \alpha e^{At} + \beta e^{Bt}$, for numbers

$\alpha =$ _____, $A =$ _____, $\beta =$ _____, $B =$ _____.

c $[D - 7I]^3(x^5 \cdot e^{7x}) =$ _____.

d With $f(t) := \int_{7t}^{\exp(5t)} \cos(x^2) dx$, then $f'(t)$ equals

Simplified, $f'(0) =$ _____.
[Hint: Chain rule and Fund. Thm of Calculus.]

e $f(x) := |x^3|$ is a C^n -fnc for this largest
 $n =$ _____ in $\mathbb{N} \cup \{\infty\}$.

Ord: _____

B2: OYOP: In grammatical English *sentences*, write
your essay on every *third* line (usually), so that I can
easily write between the lines. Do **not** restate the question.

Showing all the steps in the FOLDE algorithm,
compute the general solution $y()$ to

$$x^4 \frac{dy}{dx} + x^3 y = 8x^7 + x^6$$

Also write it here, as

$y_\alpha(x) =$ _____.

End of B-Class

HONOR CODE: "I have neither requested nor received
help on this exam other than from my professor."

Signature: _____