MATH 046 020-QUIZ 3, SPRING 2018

Name: KEY

1 (5 pts). Find the general solution of the ODE:

$$y' = y + e^{3x}$$

$\Rightarrow y' - y = e^{3x}$

$\Rightarrow y'e^{-x} - e^{-x}y = e^{3x}e^{-x}$

$\Rightarrow \frac{d}{dx}\left[ye^{-x}\right] = e^{2x}$

$\Rightarrow \int \frac{d}{dx}\left[ye^{-x}\right]dx = \int e^{2x}dx$

$\Rightarrow ye^{-x} = \frac{1}{2}e^{2x} + C$

$\Rightarrow \boxed{y(x) = \frac{1}{2}e^{3x} + Ce^{x}}$

2 (5 pts). Suppose you opened a savings account with the annual interest rate 2% and deposited \$10000 at the time you opened it. Suppose the interest compund continuously in time and you deposit \$800 into this account annully. What's yoru net profit for this account after 10 years? *You may use* $e^{0.2} = 1.2$.

* See other version for solution