

# Spring 2022 MA26600

## Exam 2 (Green Version)

### Answer Key

1. C
2. A
3. B
4. B
5. E
6. A
7. D
8.  $y(x) = -2e^{-x} - 4xe^{-x} + 2e^x$
9. (a)  $x(t) = 5 \cos(2\sqrt{5}t) + \frac{2}{\sqrt{5}} \sin(2\sqrt{5}t)$ ; (b)  $C = \sqrt{\frac{129}{5}}$ ,  $\alpha = \arctan\left(\frac{2}{5\sqrt{5}}\right)$
10.  $\mathbf{x}(t) = c_1 \begin{bmatrix} 1 \\ 3 \end{bmatrix} e^{4t} + c_2 \left( \begin{bmatrix} 1 \\ 3 \end{bmatrix} te^{4t} + \begin{bmatrix} 0 \\ -1 \end{bmatrix} e^{4t} \right)$ ;  
alternative answer  $\mathbf{x}(t) = c_1 \begin{bmatrix} 3 \\ 9 \end{bmatrix} e^{4t} + c_2 \left( \begin{bmatrix} 3 \\ 9 \end{bmatrix} te^{4t} + \begin{bmatrix} 1 \\ 0 \end{bmatrix} e^{4t} \right)$ ;