

1.(1 pt) Match the third order linear equations with their fundamental solution sets.

- 1.  $y''' + 3y'' + 3y' + y = 0$
- 2.  $ty''' - y'' = 0$
- 3.  $y''' - y'' - y' + y = 0$
- 4.  $y''' - 7y'' + 12y' = 0$
- 5.  $y''' + y' = 0$
- 6.  $y''' - 4y'' + y' - 4y = 0$

- A.  $1, e^{3t}, e^{4t}$
- B.  $e^{-t}, te^{-t}, t^2e^{-t}$
- C.  $1, t, t^3$
- D.  $e^{4t}, \cos(t), \sin(t)$
- E.  $1, \cos(t), \sin(t)$
- F.  $e^t, te^t, e^{-t}$

2.(1 pt) Find  $y$  as a function of  $x$  if

$$y''' - 8y'' + 15y' = 0,$$

$$y(0) = 9, \quad y'(0) = 6, \quad y''(0) = 6.$$

$$y(x) = \underline{\hspace{2cm}}$$

3.(1 pt) Find  $y$  as a function of  $x$  if

$$y''' + 64y' = 0,$$

$$y(0) = -6, \quad y'(0) = 32, \quad y''(0) = -64.$$

$$y(x) = \underline{\hspace{2cm}}$$

4.(1 pt) Find  $y$  as a function of  $x$  if

$$y^{(4)} - 8y''' + 16y'' = 0,$$

$$y(0) = 7, \quad y'(0) = 18, \quad y''(0) = 16, \quad y'''(0) = 0.$$

$$y(x) = \underline{\hspace{2cm}}$$

5.(1 pt) Find  $y$  as a function of  $x$  if

$$y''' - 4y'' - y' + 4y = 0,$$

$$y(0) = 5, \quad y'(0) = 1, \quad y''(0) = 65.$$

$$y(x) = \underline{\hspace{2cm}}$$

6.(1 pt) If  $L = D^2 + 3xD - 5x$  and  $y(x) = 3x - 4e^{2x}$ , then

$$Ly = \underline{\hspace{2cm}}$$

7.(1 pt) Find  $y$  as a function of  $x$  if

$$y''' - 8y'' + 12y' = 20e^x,$$

$$y(0) = 29, \quad y'(0) = 19, \quad y''(0) = 27.$$

$$y(x) = \underline{\hspace{2cm}}$$

8.(1 pt) Find  $y$  as a function of  $x$  if

$$y^{(4)} - 10y''' + 25y'' = 392e^{-2x},$$

$$y(0) = 4, \quad y'(0) = 12, \quad y''(0) = 33, \quad y'''(0) = -16.$$

$$y(x) = \underline{\hspace{2cm}}$$