

If you want to build a ship, don't drum up the men to gather wood, divide the work and give orders. Instead, teach them to yearn for the vast and endless sea...

Name and section: _____

1. (5 points) Find the general solution to the system

$$\begin{bmatrix} x_1'(t) \\ x_2'(t) \end{bmatrix} = \begin{bmatrix} 2 & 3 \\ 3 & 2 \end{bmatrix} \begin{bmatrix} x_1(t) \\ x_2(t) \end{bmatrix}. \quad (1)$$

2. (5 points) Find all values of λ for which the boundary value problem

$$y'' + \lambda y = 0, y(-1) = y(1) = 0 \tag{2}$$

has a nonzero solution, and write down the corresponding nonzero solutions.