

**Calculus II**  
**Practice Problems 12**

1. Solve  $y'' - 5y = 0$  with the initial values  $y(0) = 1$ ,  $y'(0) = -1$ .
2. Solve  $y'' + 5y = 0$  with the initial values  $y(0) = 1$ ,  $y'(0) = -1$ .
3. Solve  $y'' - 5y' + 6y = 0$  with the initial values  $y(0) = 1$ ,  $y'(0) = -1$ .
4. Solve  $y'' + 4y' + 5y = 0$  with the initial values  $y(0) = 1$ ,  $y'(0) = -1$ .
5. Solve  $y'' - y' = 0$  with the initial values  $y(2) = 1$ ,  $y'(2) = 2$ .
6. Solve  $y'' + 2y' + y = 0$  with the initial values  $y(-1) = 1$ ,  $y(1) = 1$ .
7. Solve  $y'' + 2y' + y = x$  with the initial values  $y(0) = 0$ ,  $y'(0) = 0$ .
8. Find the general solution of  $y'' + 2y' + y = \sin x$ .
9. Find the general solution of  $y'' - 4y = \sin(2x)$ .
10. Find the general solution of  $y'' + 4y = \sin(2x)$ .