

Quiz V

Answer each question as completely as you can; remember you must show *all work* for full credit. You may not consult books, notes, or each other for this quiz. Good luck!

1. Solve the boundary value problem $y'' = -y$ subject to $y(0) = 0$, $y(\pi/4) = \sqrt{2}$. You may state the general solution without proof if you desire, but please show your work to find the constants. (5 points)
2. Find a Fourier series expansion for

$$f(x) = \begin{cases} -1 & \text{if } -1 < x < 0 \\ 0 & \text{if } x = 0 \\ 1 & \text{if } 0 < x < 1, \end{cases}$$

with $f(x+2) = f(x)$. Hint: Is f even, odd, or neither? (5 points)