

Math 333 Worksheet

Dr. Holmes

March 21, 2003

For each problem, write your final answer as a piecewise defined function without using Heaviside functions.

1.

$$y'' + 3y' + 2y = f(t), y(0) = 1, y'(0) = 0$$

where $f(t) = t$ for $t < 2$

and $f(t) = 2$ for $t \geq 2$

2.

$$y'' + 4y = g(t), y(0) = 0, y'(0) = -1$$

where $g(t) = \sin(t)$ for $t < 2\pi$

and $g(t) = 0$ for $t \geq 2$

3.

$$y'' + y = h(t), y(0) = 0, y'(0) = 0$$

where $h(t) = \cos(2t)$ for $t < \frac{\pi}{2}$

and $h(t) = 0$ for $t \geq \frac{\pi}{2}$

Be careful in this problem – notice that π is only half of a period of the function $\cos(2t)$!