Gradescope Assignment: Due 4/14/21
0 pts for no work
2 pts for attempt
4 pts for full answer

1. As we've shown, one can write the solution to the initial value problem

$$x''(t) + x(t) = f(t), \ x(0) = 0, x'(0) = 0,$$

in the form

$$x(t) = \int_0^t f(s) \sin(t - s)ds.$$

For the forcing

$$f(t) = \begin{cases} At & 0 \le t \le \pi \\ A(2t - \pi) & \pi < t \le 2\pi \\ 3\pi A & t > 2\pi \end{cases}$$

where $A > 0$, find $x(t)$. Note, use the integral formulation of the solution provided in this problem prompt (though see also Problem 4.7.34 from the prior homework). Any other approach will not receive credit.

2. 5.1.15