Using the method of Laplace transforms, solve the following IVPs.

1. $y'' + 2y' + 2y = \begin{cases} 1, & \pi \leq t \leq 2\pi \\ 0, & \text{otherwise} \end{cases}$, $y(0) = 5, \quad y'(0) = 4$

2. $y'' + 4y = u_\pi(t)\sin(t - \pi)$, $y(0) = 0, \quad y'(0) = 0$

3. $y'' - y = -20\delta(t - 3)$ $y(0) = 4, \quad y'(0) = 4$

4. $y'' + y = \delta(t - 2\pi)\cos(t)$, $y(0) = 0, \quad y'(0) = 1$