MAP 2302: Homework 2 - due Monday, July 22, 2019 **Name:**

1. (10 pts) Use Laplace transform to solve the IVP

$$y''+4y'+5y = h(t)\ ,\ \ y(0)=0,\ \ y'(0)=0, \quad \text{where } h(t) = \begin{cases} 4, & 0<t<3 \\ 0, & t>3 \end{cases}$$

2. (5 + 2 pts) If $F(s) = \frac{1}{s^2(s-4)}$, find $L^{-1}\{F(s)\}$ either using partial fractions or convolution. You'll get bonus (2 pts) if you solve the problem both ways.

3. (5 pts) Use Laplace transform to solve the IVP

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