Reading: Re-read Boas 8.9 as necessary. Our next topic will be on series solutions, Chapter 12. The text starts on pg 562.

(1) Find the inverse Laplace transform of

$$Y = \frac{2s + 5}{s^2 + 2s + 5}$$

(2) Find the Laplace transform of

$$f(t) = \begin{cases} \sin t, & 0 < t \leq \pi \\ 0, & \pi < t < 2\pi \end{cases}$$

(3) Solve the ODE

$$u''(x) + 25u(x) = 50\sin(5x) \text{ with } u(0) = 0 = u'(0)$$

using Laplace transforms. Sketch (or plot) your solution and describe the system.