1. Section 7.1: 5, 7, 9, 19, 27, 28

2. Find the Laplace transform of

$$f(t) = \begin{cases} 0 & t < 2 \\ e^{-t} & t \geq 2. \end{cases}$$

Hint: Change the lower end-point of integration.

3. This question deals with the function

$$h_a(t) = \begin{cases} 0 & t < a \\ 1 & t \geq a. \end{cases}$$

a) Find $\mathcal{L}\{h_a(t)\}$.

b) By hand, graph $f(t) = h_0(t) - h_1(t)$.

c) By hand, graph $g(t) = h_0(t) - h_1(t) + h_2(t) - h_3(t)$.

d) Find the Laplace transforms of $f(t)$ and $g(t)$.

e) Graph $b(t) = \sum_{n=0}^{\infty}(-1)^n u_n(t)$.

f) Find the Laplace transform of $b(t)$. It may be helpful to know that $1-x+x^2-x^3+\cdots = 1/(1+x)$. It may also be helpful to notice that $e^{-ns} = (e^{-s})^n$.

4. Section 7.2: 1,3 (Wait until after Monday's class for these.)