1. Section 7.2: 1-10

2. Section 7.3 19, 9 (Wait until after Wednesday for problem 9)

3. This question deals with the function

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

We showed in class today that $\mathcal{L}(u_a(t)) = e^{-as}/s$.

a) By hand, graph $f(t) = u_0(t) - u_1(t)$.

b) By hand, graph $g(t) = u_0(t) - u_1(t) + u_2(t) - u_3(t)$.

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

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

e) 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 $e^{-ns} = (e^{-s})^n$.