

Assignment 9 (due 4.1) 6.2: 19, 20, 22, 23;
6.3: 5, 8, 9, 10, 13, 15, 24, 25, 28, 29; 6.4 ?

6.3: Step functions.

$$u_c(t) = \begin{cases} 0 & t < c \\ 1 & t \geq c \end{cases}$$

1.) Graph $u_c(t)$:

2.) Given f , graph $u_c(t)f(t - c)$:

3.) Calculate $\mathcal{L}(u_c(t)f(t - c))$ in terms of $\mathcal{L}(f(t))$:

Example: Find the LaPlace transform of

4.)
$$g(t) = \begin{cases} 0 & t < 3 \\ e^{t-3} & t \geq 3 \end{cases}$$

5.)
$$f(t) = \begin{cases} 0 & t < 3 \\ 5 & 3 \leq t < 4 \\ t - 5 & t \geq 4 \end{cases}$$

6.) Example: Find the inverse Laplace transform of $\frac{e^{-8s}}{s^3}$

7.) Calculate $\mathcal{L}(e^{ct}f(t))$ in terms of $F(s) = \mathcal{L}(f(t))$

8.) Example: Use formula 6 (p. 304) to find the inverse LaPlace transform of $\frac{s-c}{(s-c)^2+a^2}$.