Lecturer

Set up MATLAB

In [1]:

```
clear all
format compact
```

Worksheet 4

To accompany Chapter 3.1 Laplace Transform

We will step through this worksheet in class.

You are expected to have at least watched the video presentation of Chapter 3.1 (https://cpjobling.github.io/eg-247-textbook/laplace_transform/1/laplace) of the notes (https://cpjobling.github.io/eg-247-textbook) before coming to class. If you haven't watch it afterwards!

TurningPoint Mobile Polling Setup

We will be using TurningPoint mobile response system polling in this session.

There are two ways to participate:

1. Use a web browser

This option always works providing you have a mobile web browser.

Browse to: https://ttpoll.eu (https://ttpoll.eu).

https://ttpoll.eu (https://ttpoll.eu)

2. Install and open the TurningPoint app

Browse to: TurningPoint app (https://www.turningtechnologies.com/turningpoint-app/)

https://goo.gl/MEjxu7 (https://goo.gl/MEjxu7)

Use the links to the App stores at the bottom of that page or follow these links: App Store (https://itunes.apple.com/us/app/responseware/id300028504?mt=8), Google Play (https://play.google.com/store/apps/details?id=com.turningTech.Responseware&feature=search_result#?t=W251bGwsMSwyLDEsImNvbS50dXJuaW5nVGVjaC5SZXNwb25zZXdhcmUiXQ..).

When prompted: enter the **session ID**

Today's Session ID

EG2470002

Assign yourself to a group by table

There should be a card with a **group name** on your table.

Please use your TurningPoint app or the TurningPoint web app to assign yourself to your table's group name.

-> Launch Poll

Icebreaker Questions

-> Launch Poll

End of setup

Plan B

If TurningPoint doesn't work, use this Google form instead

https://goo.gl/forms/EuyH6G7za2knqt862 (https://goo.gl/forms/EuyH6G7za2knqt862)

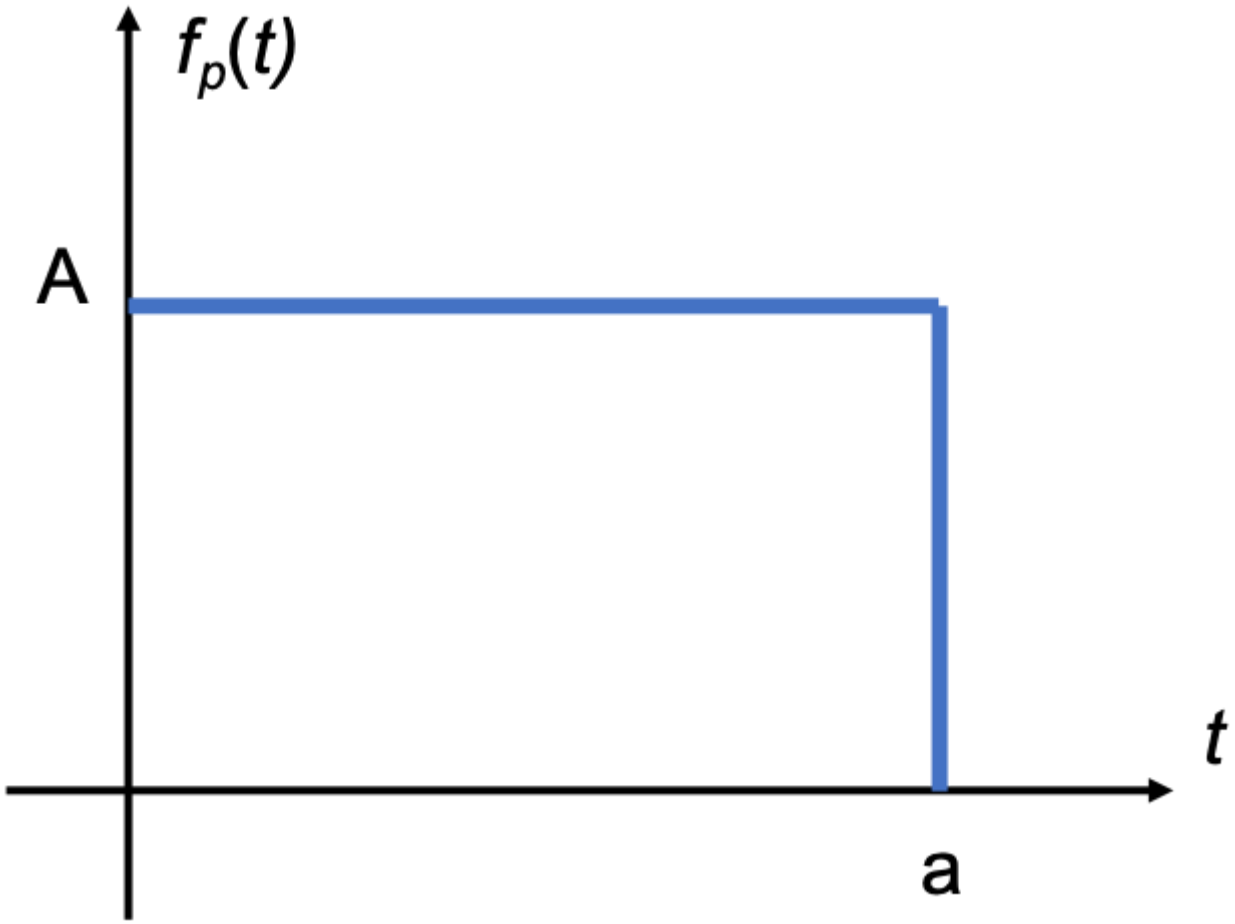
Laplace transforms of common waveforms

We will work through a few of the following on the board in class

- Pulse
- Linear segment
- Triangular waveform
- Rectangular periodic waveform (square wave)
- Half rectified sine wave

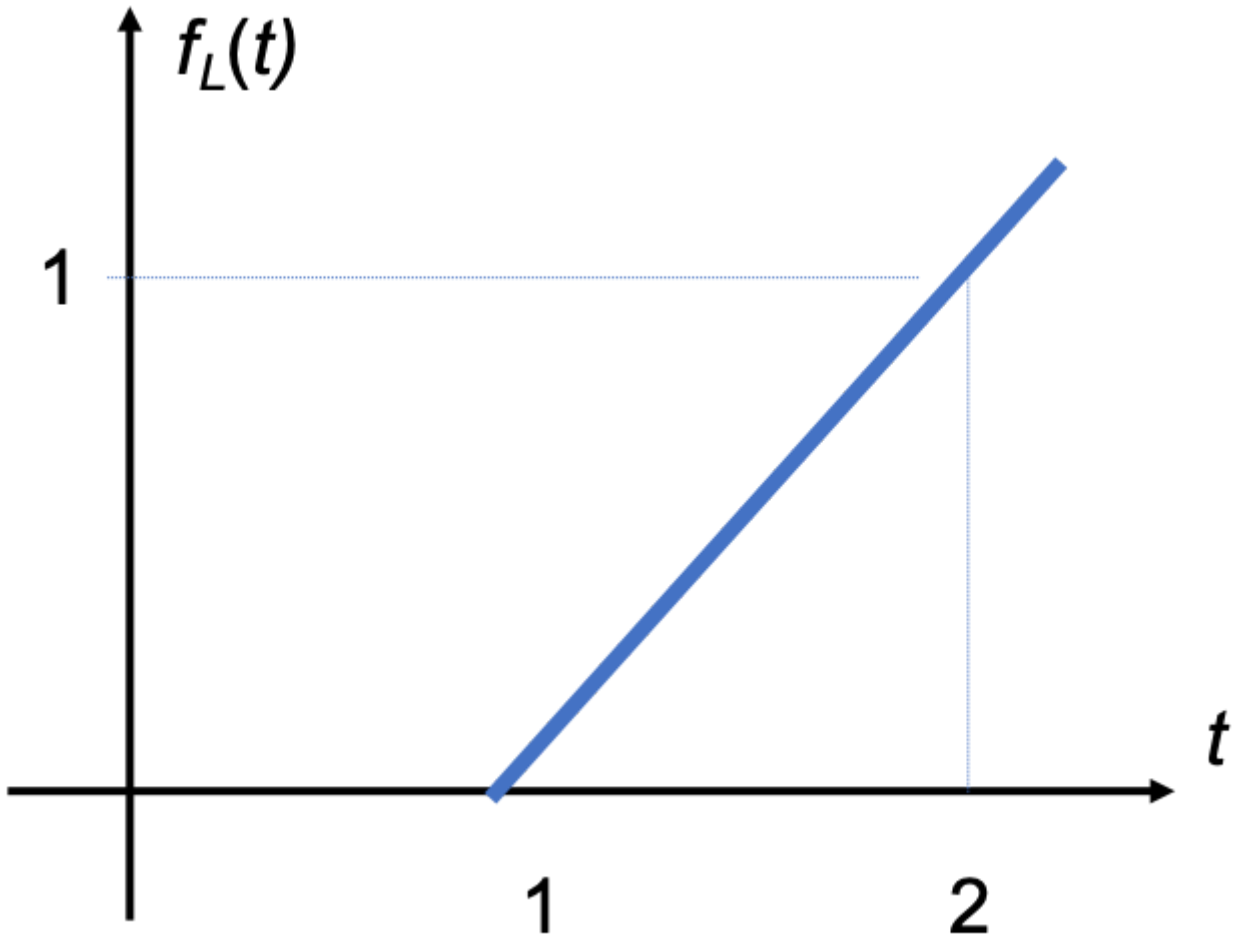
Pulse

Compute the Laplace transform of the pulse shown in the figure.



Line segment

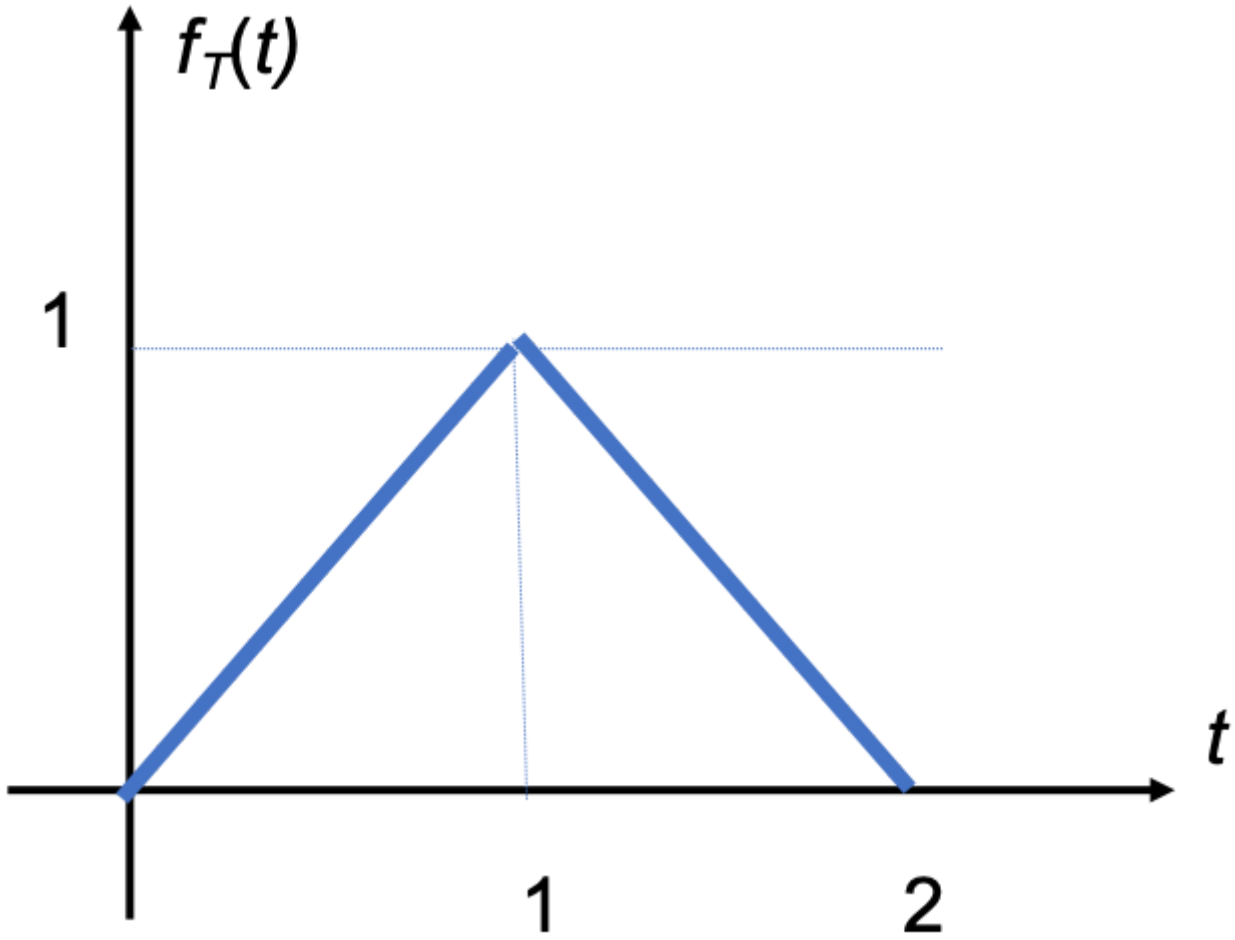
Compute the Laplace transform of the line segment shown below.



</pre>

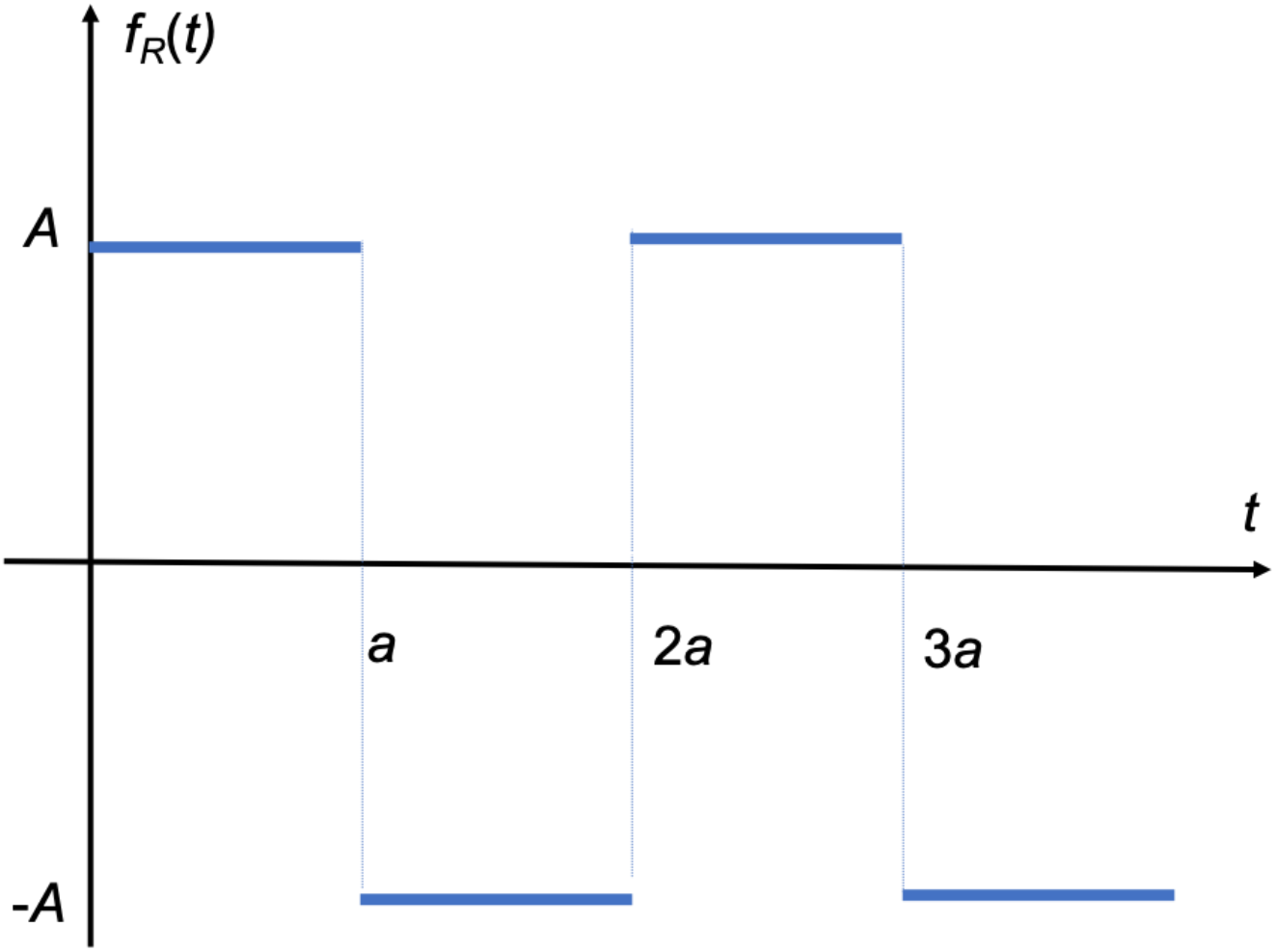
Triangular Pulse

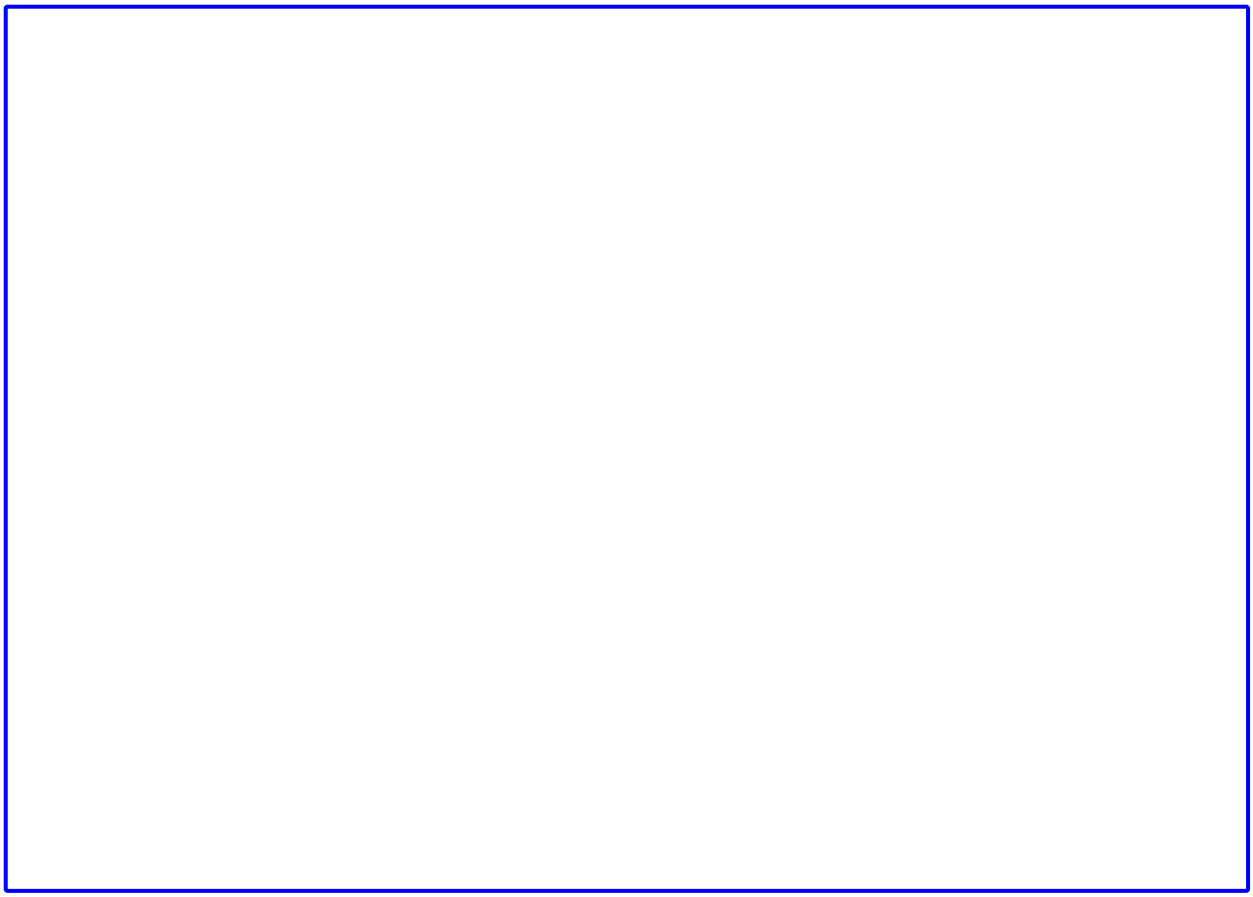
Compute the Laplace transform of the triangular pulse shown below



Square Wave

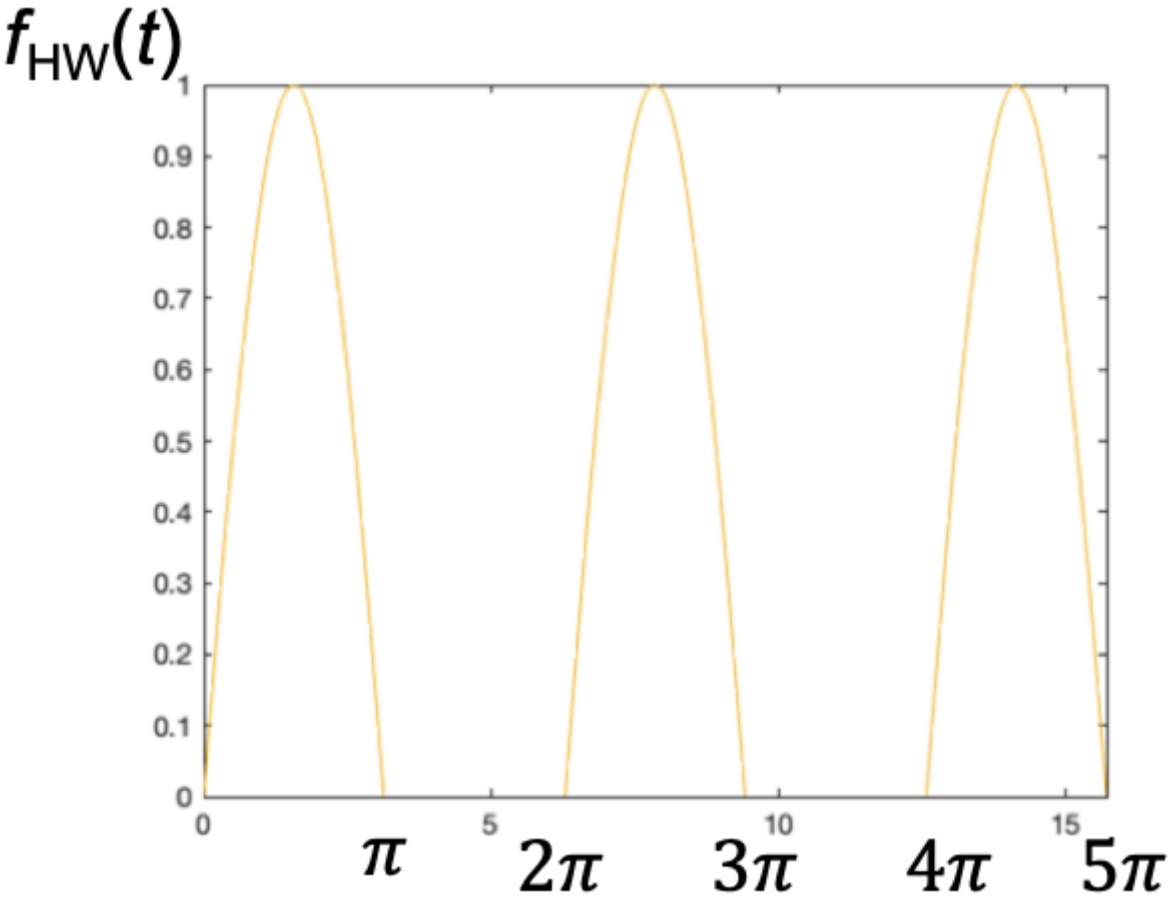
Compute the Laplace transform of the periodic function shown below.





Half-rectified Sinewave

Compute the Laplace Transform of the half-rectified sine wave shown below.



Homework

Attempt at least one of the end-of-chapter exercises from each question 1-7 of Section 2.7 of Karris (https://ebookcentral.proquest.com/lib/swansea-ebooks/reader.action?docID=3384197&ppg=75#ppg=71). Don't look at the answers until you have attempted the problems.

If we have time, I will work through one or two of these in class.

Answers to in-class problems

1. $$Au_0(t) - Au_0(t-a) \Leftrightarrow \frac{A\left(1-e^{-as}\right)}{s}.$$
2. $$(t-1)u_0(t-1) \Leftrightarrow \frac{e^{-s}}{s}.$$
3. $$f_T(t) \Leftrightarrow \frac{\left(1-e^{-s}\right)^2}{s^2}.$$
4. $$f_R(t) \Leftrightarrow \frac{A\tanh\left(\frac{As}{2}\right)}{s}.$$
5. $$f_H W(t) \Leftrightarrow \frac{1}{\left(s^2+1\right)\left(1-e^{\pi s}\right)}.$$