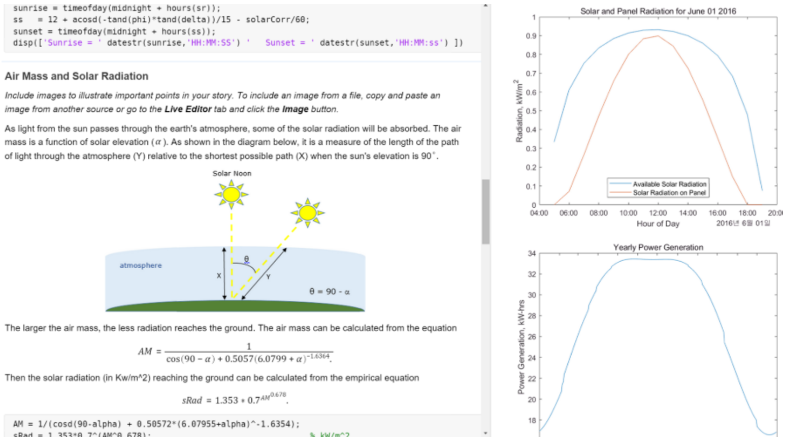
MATLAB EXPO 2017
KOREA

4월 27일, 서울

등록 하기 matlabexpo.co.kr

Introducing the MATLAB Live Editor



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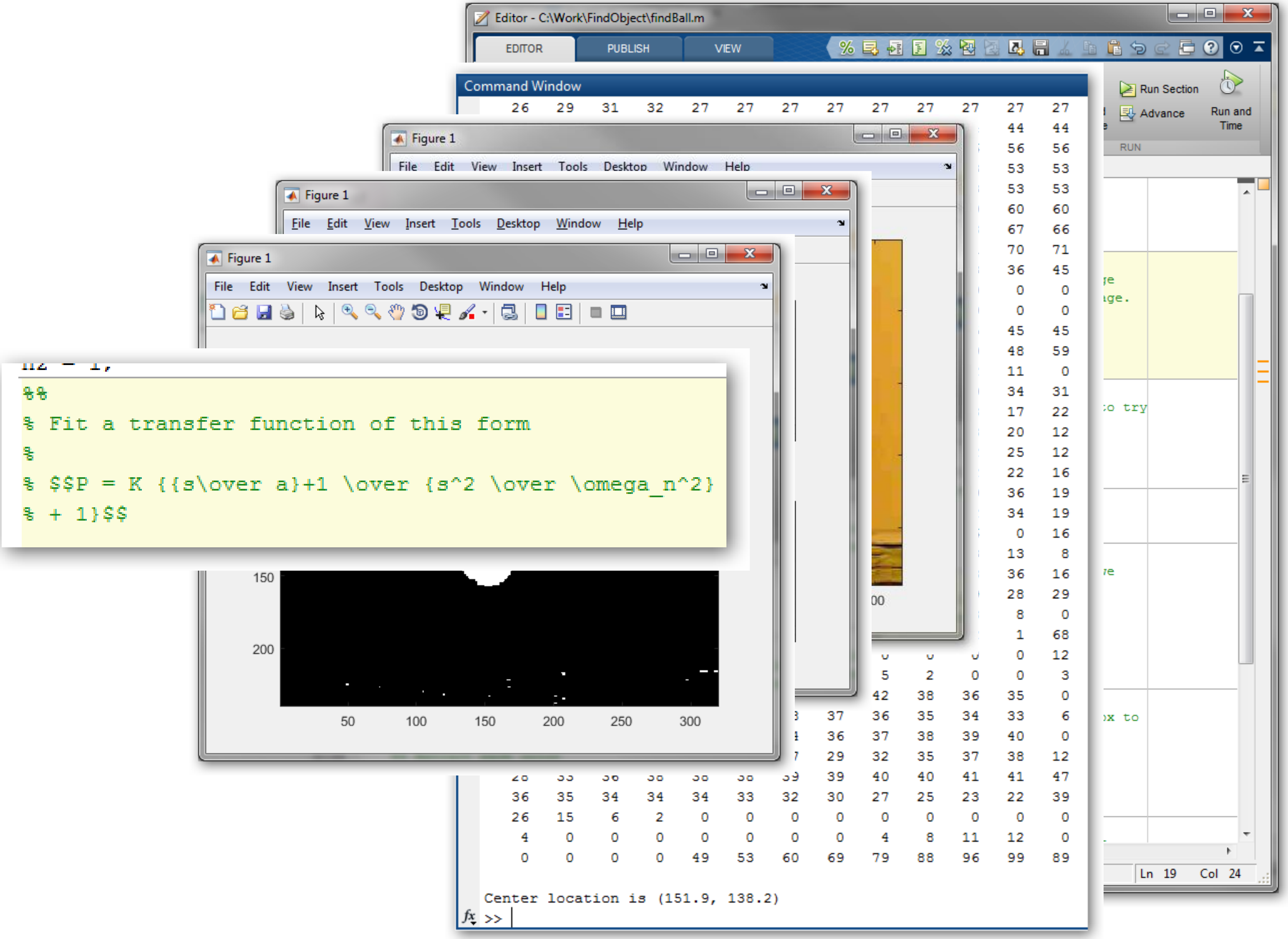
Agenda

- What is the Live Editor?
- Live Editor Demo
- Using the Live Editor
- Summary

Editing and Running MATLAB Code Today

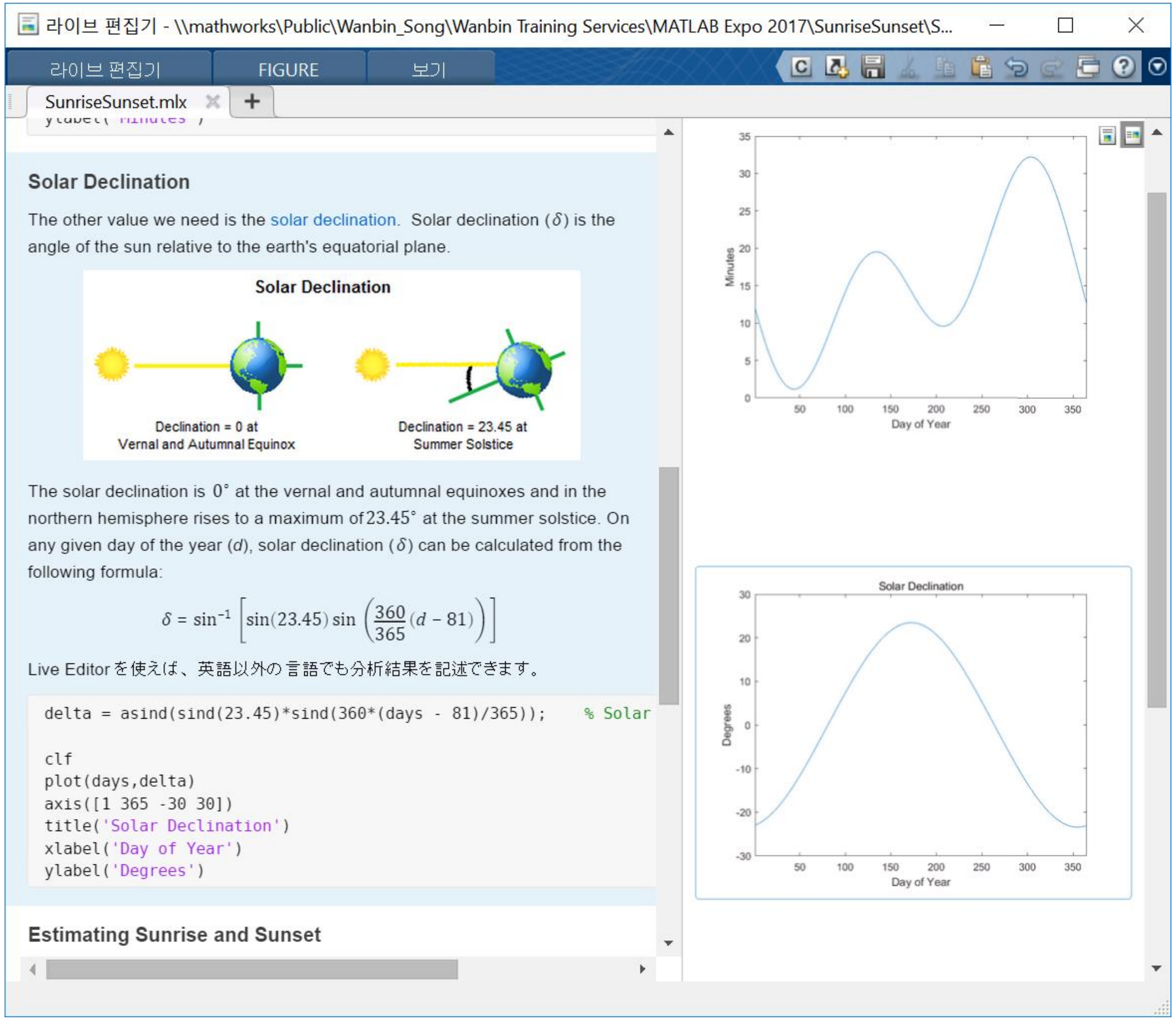
- Plain-text editing
- Output goes to Command Window
- Multiple figure windows appear
- Equations, images, and hyperlinks only appear if published



What is the Live Editor?

The Live Editor provides **a new way to create, edit and run MATLAB code**.

- Write, edit, and run code in a single interactive environment
- Generate results and graphics in the Live Editor alongside the code that produced them
- Include LaTeX equations, images, and hyperlinks as supporting material to create an interactive narrative
- Share your narrative as a richly formatted, executable document with code and results



Live Editor Demo

MathWorks

Using the Live Editor

Accelerate Exploratory Programming

- Write, execute, and test code in a single interactive environment
- Generate results and graphics in the Live Editor alongside the code that produced them
- Find errors at the location in the file where they occur
- Suggests corrections for mistyped commands and variables
- Edit a figure interactively

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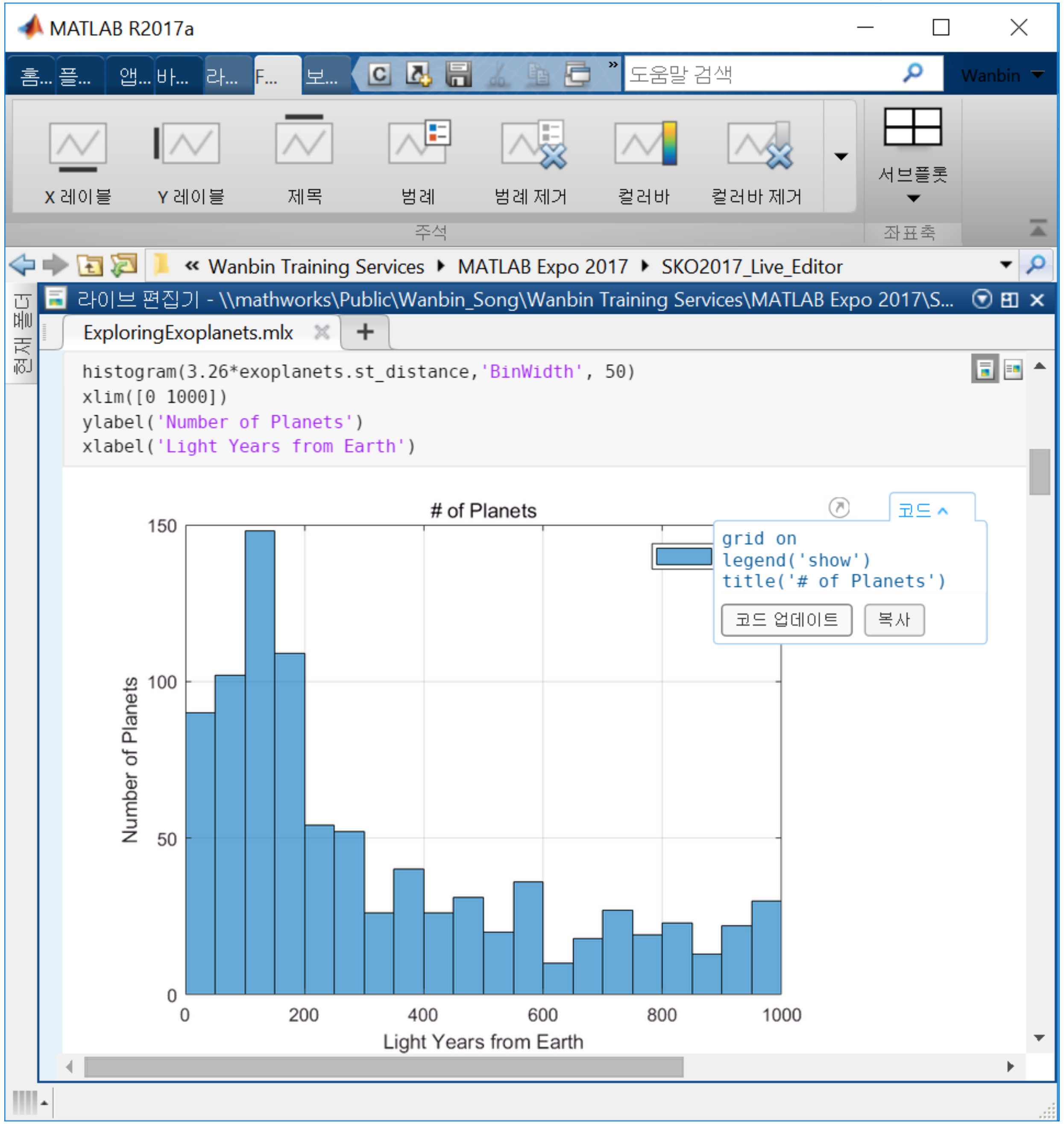
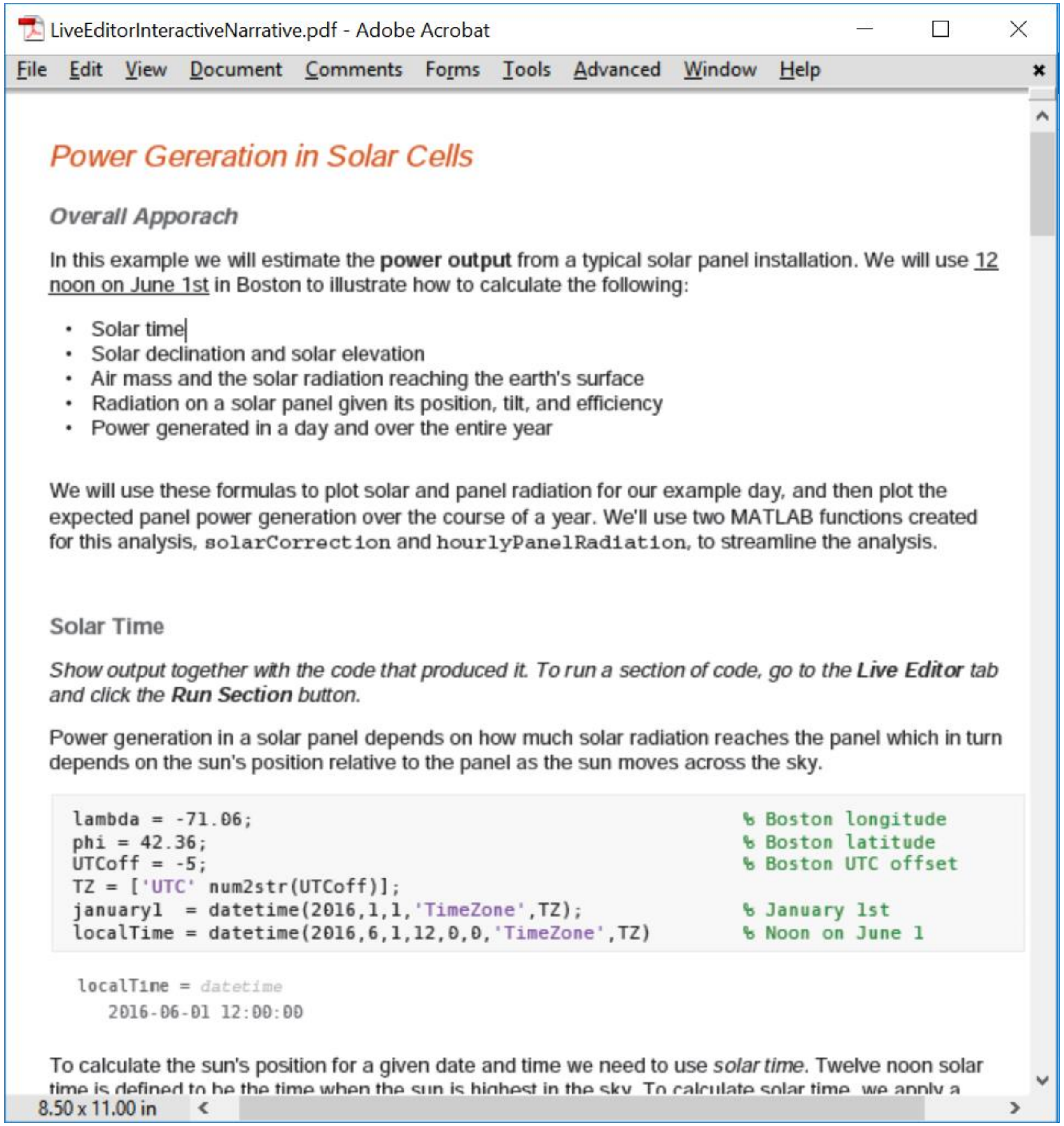


Using the Live Editor

Create an Interactive Narrative

- Add titles, headings, and formatted text
- Include LaTeX equations
- Add images, and hyperlinks as supporting material
- Save your narrative with code and results that others can use to validate and extend your results
- Convert interactive documents to HTML or PDF for publication


LiveEditorInteractiveNarrative.pdf - Adobe Acrobat

File Edit View Document Comments Forms Tools Advanced Window Help

Power Gereration in Solar Cells

Overall Apporach

In this example we will estimate the **power output** from a typical solar panel installation. We will use 12 noon on June 1st in Boston to illustrate how to calculate the following:

- Solar time
- Solar declination and solar elevation
- Air mass and the solar radiation reaching the earth's surface
- Radiation on a solar panel given its position, tilt, and efficiency
- Power generated in a day and over the entire year

We will use these formulas to plot solar and panel radiation for our example day, and then plot the expected panel power generation over the course of a year. We'll use two MATLAB functions created for this analysis, `solarCorrection` and `hourlyPanelRadiation`, to streamline the analysis.

Solar Time

*Show output together with the code that produced it. To run a section of code, go to the **Live Editor** tab and click the **Run Section** button.*

Power generation in a solar panel depends on how much solar radiation reaches the panel which in turn depends on the sun's position relative to the panel as the sun moves across the sky.

```
lambda = -71.06;                                          % Boston longitude
phi = 42.36;                                              % Boston latitude
UTCoff = -5;                                              % Boston UTC offset
TZ = ['UTC' num2str(UTCoff)];
january1  = datetime(2016,1,1,'TimeZone',TZ);             % January 1st
localTime = datetime(2016,6,1,12,0,0,'TimeZone',TZ)       % Noon on June 1
```

```
localTime = datetime
   2016-06-01 12:00:00
```

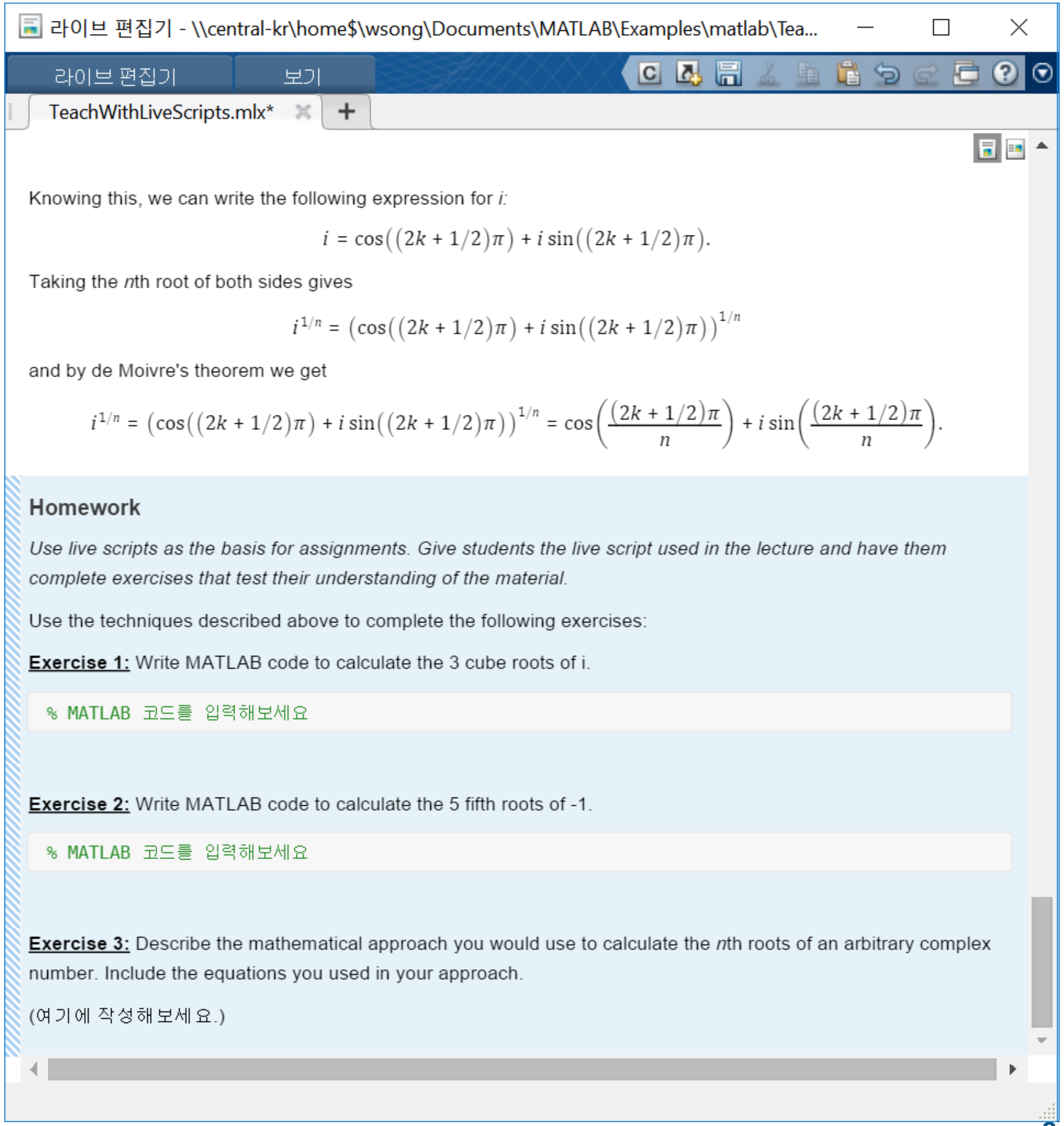
To calculate the sun's position for a given date and time we need to use *solar time*. Twelve noon solar time is defined to be the time when the sun is highest in the sky. To calculate solar time, we apply a

8.50 x 11.00 in

Using the Live Editor

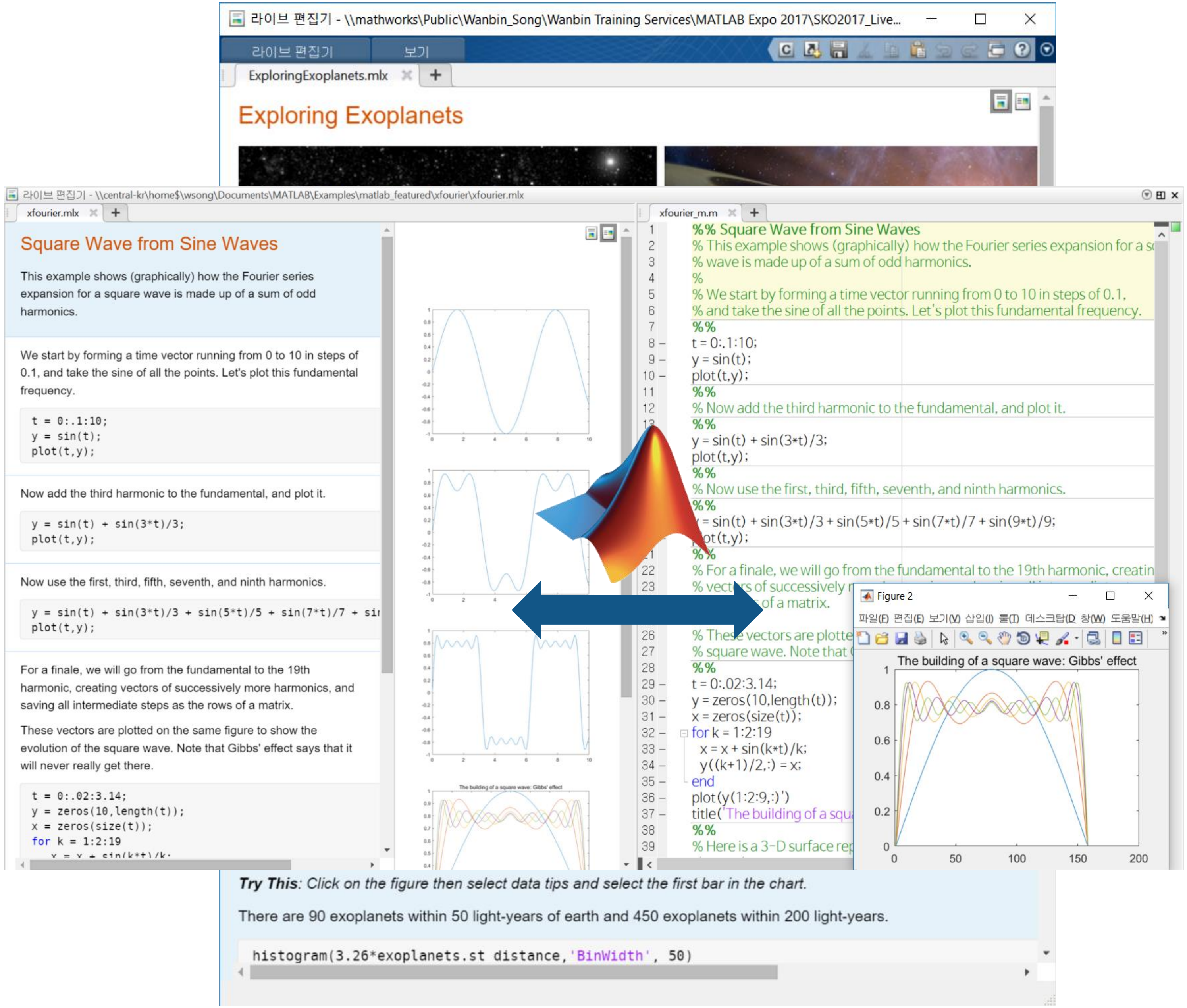
Teach with Live Scripts

- Create lectures that combine code and results with formatted text and mathematical equations
- Include images, and links to supporting materials
- Modify and run code on the fly to answer questions or explore related topics
- Share lectures with students as interactive documents or in hardcopy format.
- Create partially completed files for individual assignments or team projects



Summary

- Key Takeaways
  - New form of Coding
    - Documentation
    - Visualization of Outputs
  - Still MATLAB
    - Compatible with MATLAB Script
    - Do not need to learn new language



Summary

- Try today in our Demo booth