

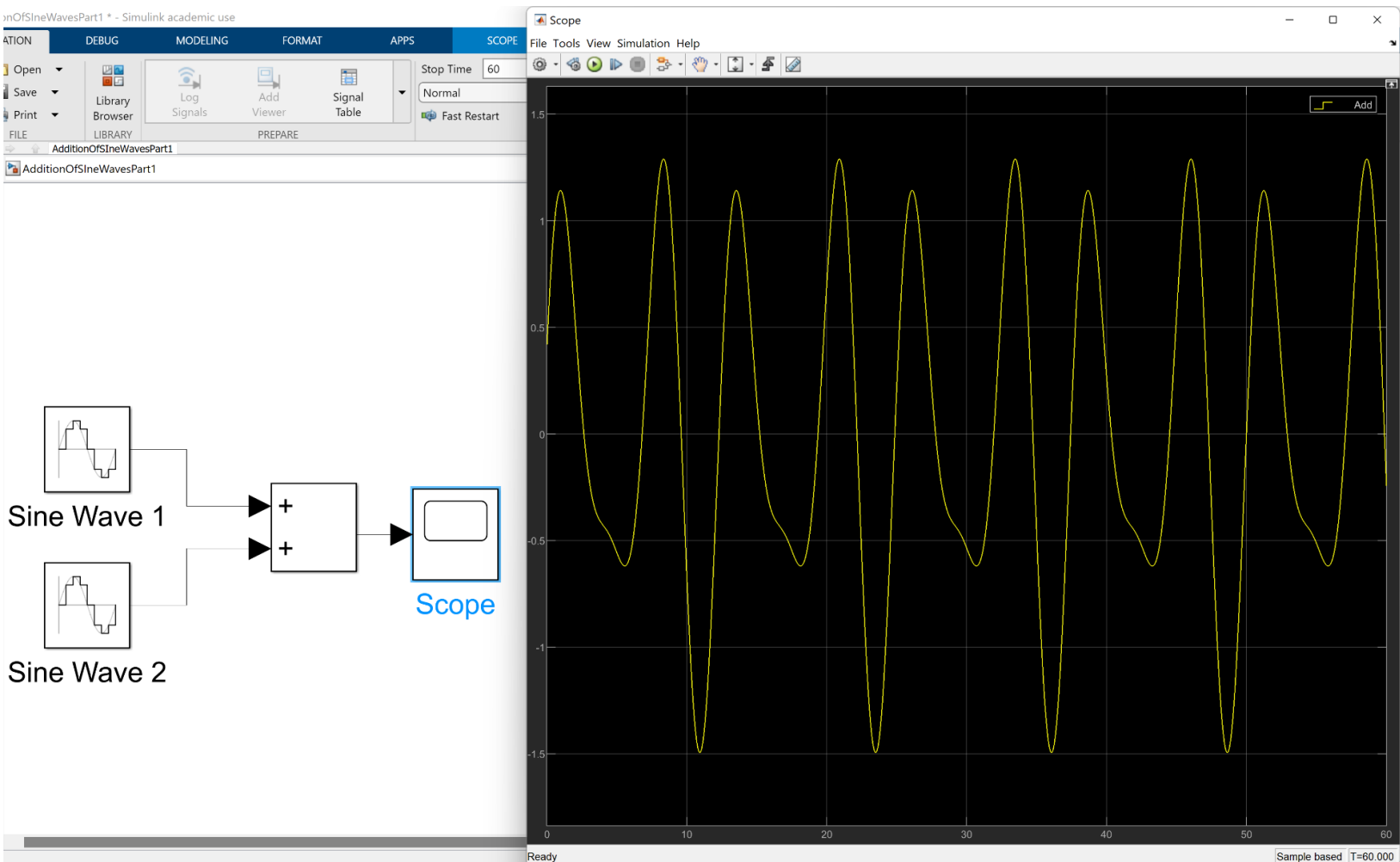
## Q3 MATLAB and Simulink Basics

Prove your skill set in using tools for analytical calculations.

### Q3.3 Matlab Simulink Sinusoid Signals

I can add two sinusoid waves and show the display using MATLAB Simulink

For this problem I used two sine wave functions then used the math operation add tool block shown below in between waves and scope blocks to combine the two outputs which can be seen in the graph to the right. The settings used to create Sine Wave 1 are shown below on the left and the settings used to create Sine Wave 1 are on the right, and the output is shown in the yellow graph below.



Block Parameters: Sine Wave 1

Sine Wave  
Output a sine wave:

$$O(t) = \text{Amp} * \sin(\text{Freq} * t + \text{Phase}) + \text{Bias}$$

Sine type determines the computational technique used. The parameters in the two types are related through:

$$\text{Samples per period} = 2 * \pi / (\text{Frequency} * \text{Sample time})$$
$$\text{Number of offset samples} = \text{Phase} * \text{Samples per period} / (2 * \pi)$$

Use the sample-based sine type if numerical problems due to running for large times (e.g. overflow in absolute time) occur.

Parameters

Sine type: Time based

Time (t): Use simulation time

Amplitude: 1

Bias: 0

Frequency (rad/sec): 1

Phase (rad): 0

Sample time: .0001

Interpret vector parameters as 1-D

OK Cancel Help Apply

Block Parameters: Sine Wave 2

Sine Wave  
Output a sine wave:

$$O(t) = \text{Amp} * \sin(\text{Freq} * t + \text{Phase}) + \text{Bias}$$

Sine type determines the computational technique used. The parameters in the two types are related through:

$$\text{Samples per period} = 2 * \pi / (\text{Frequency} * \text{Sample time})$$
$$\text{Number of offset samples} = \text{Phase} * \text{Samples per period} / (2 * \pi)$$

Use the sample-based sine type if numerical problems due to running for large times (e.g. overflow in absolute time) occur.

Parameters

Sine type: Time based

Time (t): Use simulation time

Amplitude: 0.5

Bias: 0

Frequency (rad/sec): 1.5

Phase (rad): 1

Sample time: 0.0001

Interpret vector parameters as 1-D

OK Cancel Help Apply