

Clearly  $R_{5,4}(x)$  is not a valid approximation of the sine function for all  $x$ . With MATLAB, write your own version of the sine function that uses  $R_{5,4}(x)$  on the interval  $[-\pi/2, \pi/2]$  and then makes use of the basic properties of the sine function (e.g. periodicity) to calculate the sine for any value of  $x$ . Your MATLAB code should be in the form of a function, so when complete, you need only type at the prompt `mysine(x)` (for example), which will give an accurate value of sine of  $x$ . Compare your sine function with the built-in MATLAB sine function and plot a graph of the error on  $[0, 2\pi]$ .