

## PROBLEM:

For the *modified Dirichlet* function:

$$\tilde{\mathcal{D}}(\hat{\omega}, 5) = \frac{\sin(2.5\hat{\omega})}{\sin(\frac{1}{2}\hat{\omega})}$$

- Make a plot of  $\tilde{\mathcal{D}}(\hat{\omega}, 5)$  over the range  $-2\pi \leq \hat{\omega} \leq +2\pi$ . Label all the zero crossings.
- Determine the period of  $\tilde{\mathcal{D}}(\hat{\omega}, 5)$ . Is it equal to  $2\pi$ ; why, or why not?
- Find the maximum value of the function.

Note: the unmodified *Dirichlet* function is defined via:  $\mathcal{D}(\hat{\omega}, L) = \frac{\sin(L\hat{\omega}/2)}{L \sin(\frac{1}{2}\hat{\omega})}$ , so  $\tilde{\mathcal{D}}(\hat{\omega}, 5) = 5\mathcal{D}(\hat{\omega}, 5)$ .

In MATLAB consult help on `diric` for more information.