exampleA.m : file for publish_mpl showing extra options

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This file will be used to demonstrate the possibilies of the new function `publish_mpl` . The new function expands the possibilities of the standard `publish` function with regard to the LaTeX format. Motivation for creating this new function is that I want more control over the output than the pdf and html format can offer. So LaTeX is the obvious choice but at the same time I want to avoid manual editing of the tex file handle as much as possible. By using an adapted xsl file, the package matlab-prettifier created by Julien Cretel and using additional `publish` options we can achieve the following:

1. determine the documentclass and layout of the document
2. show MATLAB code (and also listings of mfiles) in a nice layout
3. specify hyperref options that determine the pdf attributes
4. determine how the header of the document is presented (titel, author, list of figures and listings)
5. include captions and references

Acknowledgement

This file is adapted from the `fourier_demo2.m` file that is included in MATLAB and can be copied in the current directory with

```
copyfile(fullfile(matlabroot,'help','techdoc',...
'matlab_env','examples','fourier_demo2.m'),'.','f')
```

Square Waves from Sine Waves

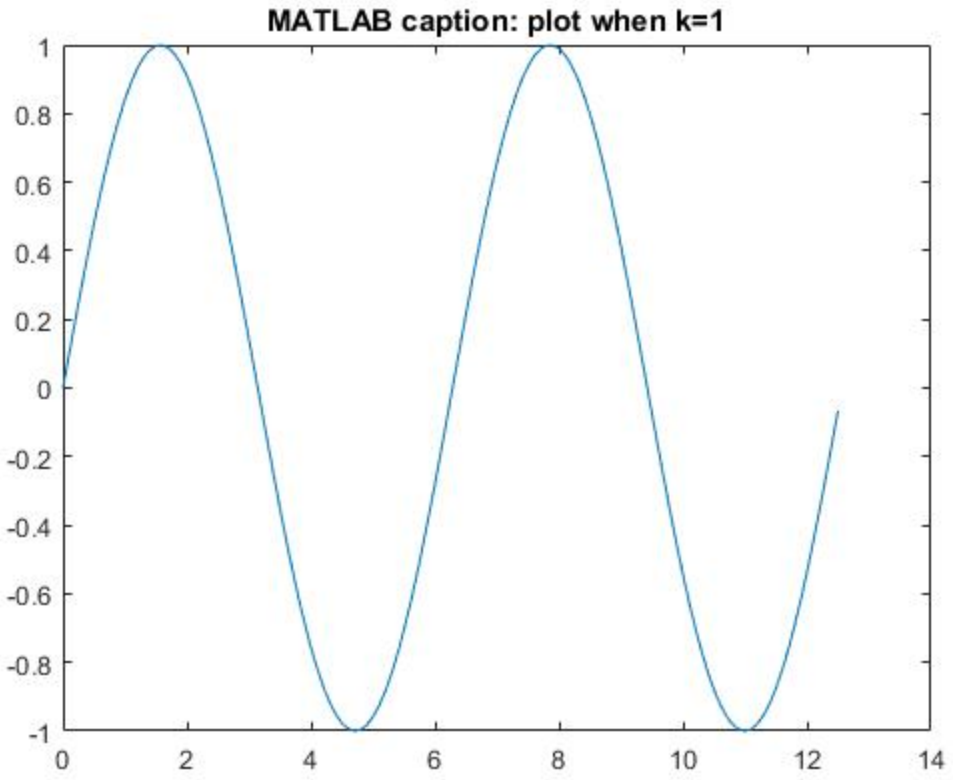
```
if exist('avalue','var')
    fprintf('print the value passed to this script: %f\n',avalue)
else
    fprintf('no value passed to this script\n')
end
```

```
print the value passed to this script: 2.000000
```

Add an Odd Harmonic and Plot It

```
t   = 0:.1:pi*4;
```

```
k   = 1 ;
y   = sin(k*t)/k;
figure(k)
plot(t,y);
title(sprintf('MATLAB caption: plot when k=%.0f',k))
```



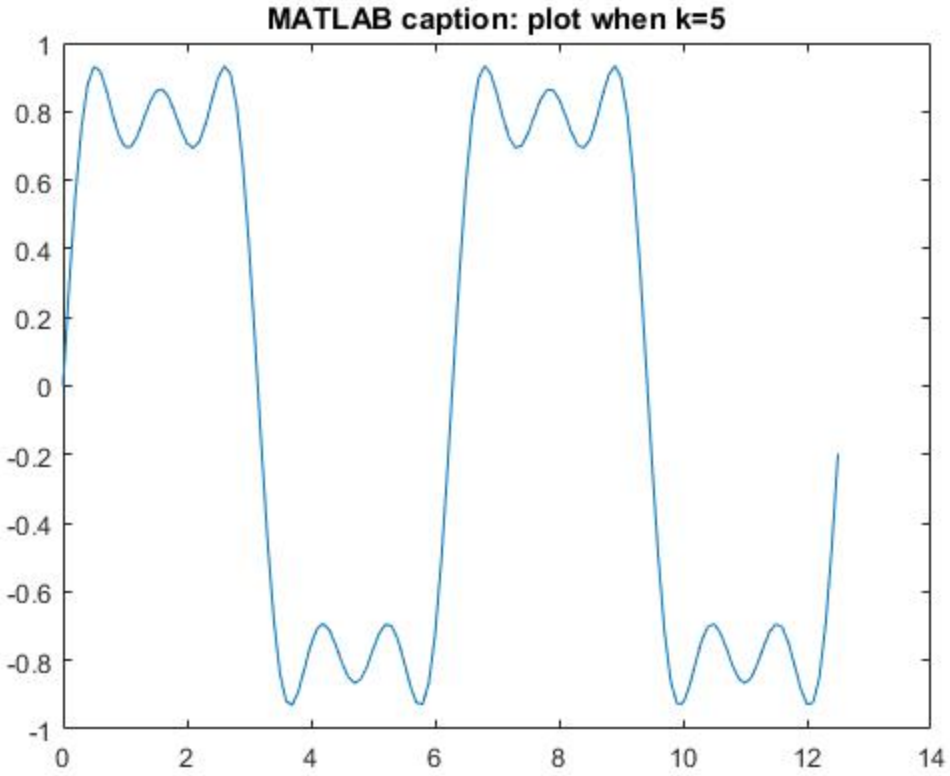
In each iteration of the for loop add an odd harmonic to y. As *k* increases, the output approximates a square wave with increasing accuracy.

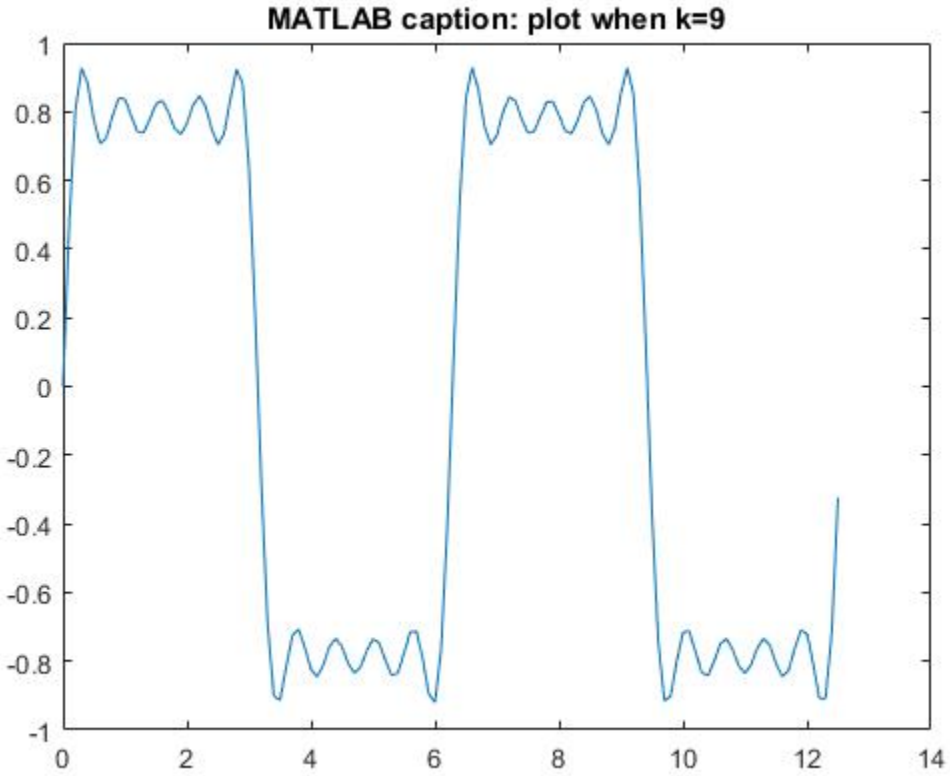
Perform the following mathematical operation at each iteration:

$$y = y + \frac{\sin kt}{k}$$

Display some of the plots:

```
for k = 3:2:9
    y = y + sin(k*t)/k;
    if mod(k,4)==1
        figure(k)
        plot(t,y)
        title(sprintf('MATLAB caption: plot when k=%.0f',k))
    end
end
```


MATLAB caption: plot when k=5
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
0
2
4
6
8
10
12
14


MATLAB caption: plot when k=9
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
0
2
4
6
8
10
12
14

Note About Gibbs Phenomenon

Even though the approximations are constantly improving, they will never be exact because of the Gibbs phenomenon, or ringing.

Listing of this script

Listing of publish_mpl_examples.m

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