Final Exam

1. Image processing

(1) Show the original image `lenna.tif`.

In [29]:

(2) Display three components of RGB in one figure.

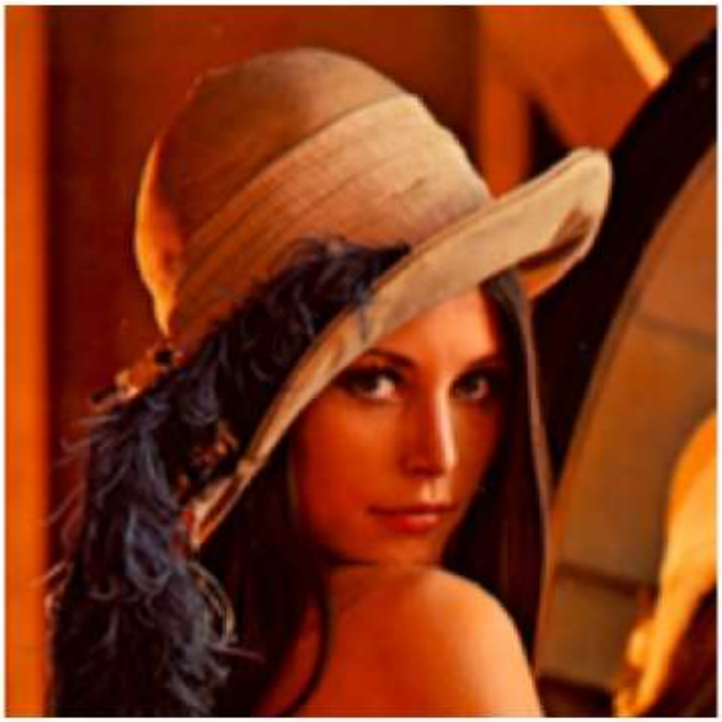
In [30]:

Display three components of HSI in one figure.

In [31]:

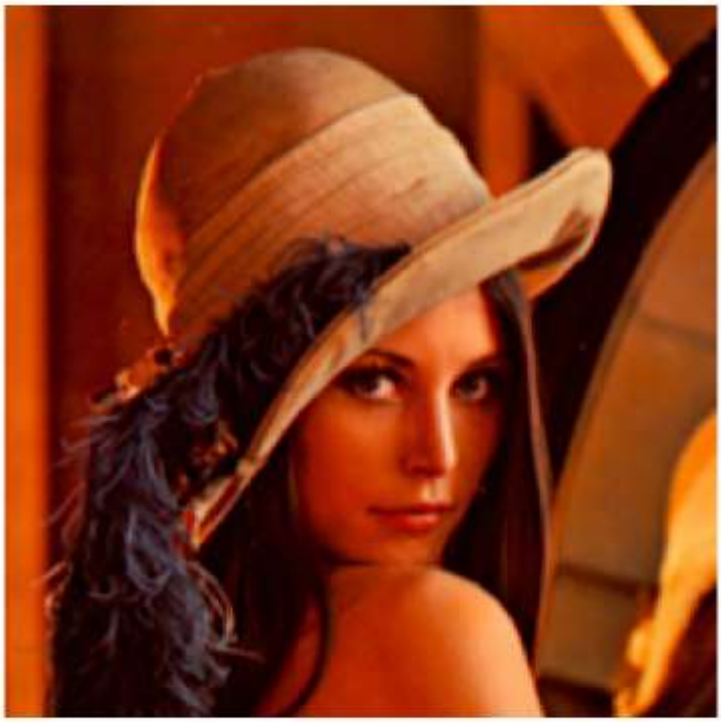
(3) Smooth each component image of the RGB image independently using a 5×5 spatial averaging mask, and combine the individually smoothed images to form the smoothed, full-color RGB result. Show the result.

In [32]:



(4) Smooth only the intensity component of the HSI image using a 5×5 spatial averaging mask (leave the hue and saturation conponents unmodified) and convert the processed result to an RGB image. Show the result.

In [33]:



Show the difference between the two smoothed images.

Note the numeric type of the variable.

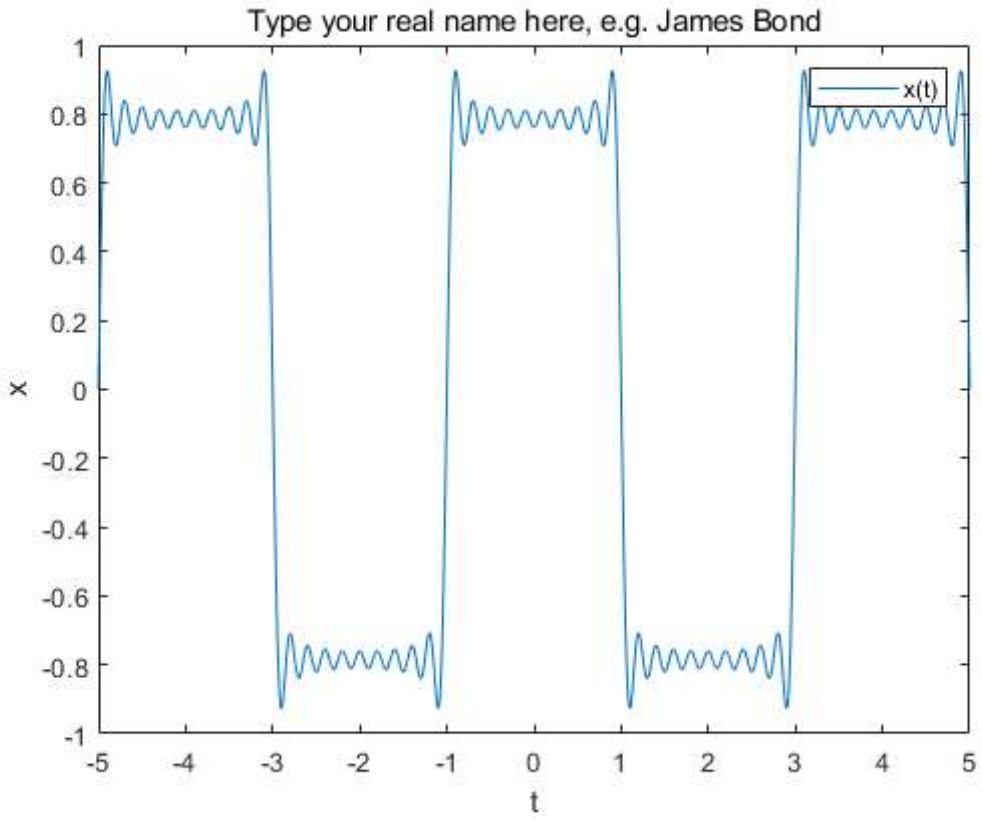
In [43]:

2. Draw the following function in one figure shown below.

$$x(t) = \sum_{k=1}^{20} \frac{1}{k} \sin \frac{k\pi}{2} \cos \frac{k\pi t}{2}$$

where, $-5 \leq t \leq 5$

In [2]:


Type your real name here, e.g. James Bond
x(t)
x
t
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-5
-4
-3
-2
-1
0
1
2
3
4
5