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Math 362 Fourier Analysis

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3.1 HW

3.1.5

Adapt a MATLAB program to determine if the two functions are orthogonal and plot the two graphs together.

|  |  |
| --- | --- |
| >> InnerProdTrig(0,1,-1,1)  innerprod =  2.2638e-17 0 orthogonal  >> t=[0:0.01:2\*pi];  >> f=sin(3\*t);  >> plot(t,f)  >> g=cos(3\*t);  >> plot(t,g) |  |



3.1.6

Adapt a MATLAB program to determine if the two functions are orthogonal and plot the two graphs together.

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| --- | --- |
| >> InnerProdTrig(0,1,-1,1)  innerprod =  0.5000 0 not orthogonal  >> t=[0:0.01:2\*pi];  >> f=sin(2\*pi\*3\*t);  >> plot(t,f)  >> g=f;  >> plot(t,g) |  |



3.1.17

Adapt an appropriate MATLAB program from this section to do the following. Show MATLAB commands used.  
(a) Plot the graphs of and on [0,1] on the same axis.

(b) Compute the similarity coefficient of relative to on [0,1].

|  |  |
| --- | --- |
| a.)  >> t=[0:0.01:2\*pi];  >> f=cos(3\*pi\*t);  >> plot(t,f)  >> hold on  >> g=cos(3.12\*pi\*t);  >> plot(t,g) |  |

|  |  |
| --- | --- |
| b.)  >> SimilarityTrig(0,1,-1,1)  C =  0.9620 |  |