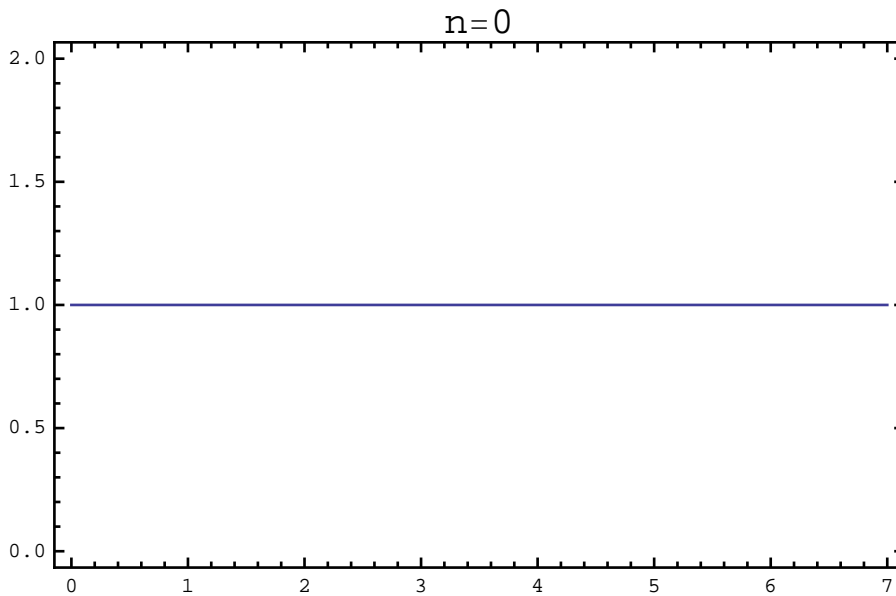
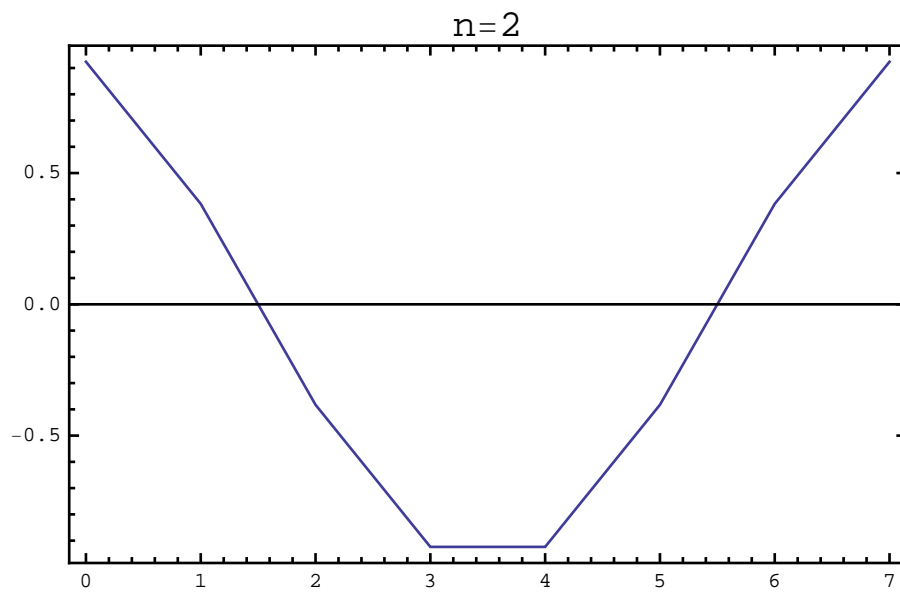
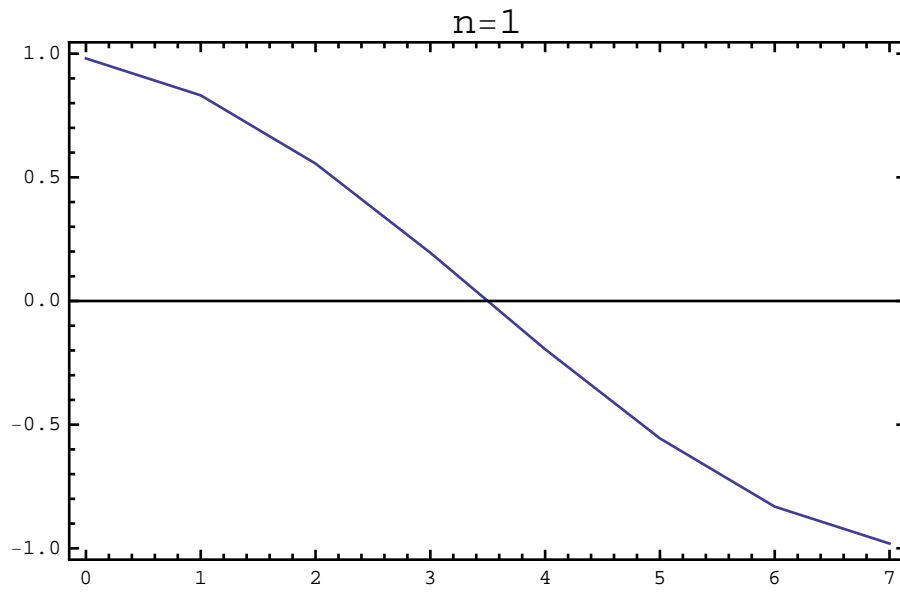
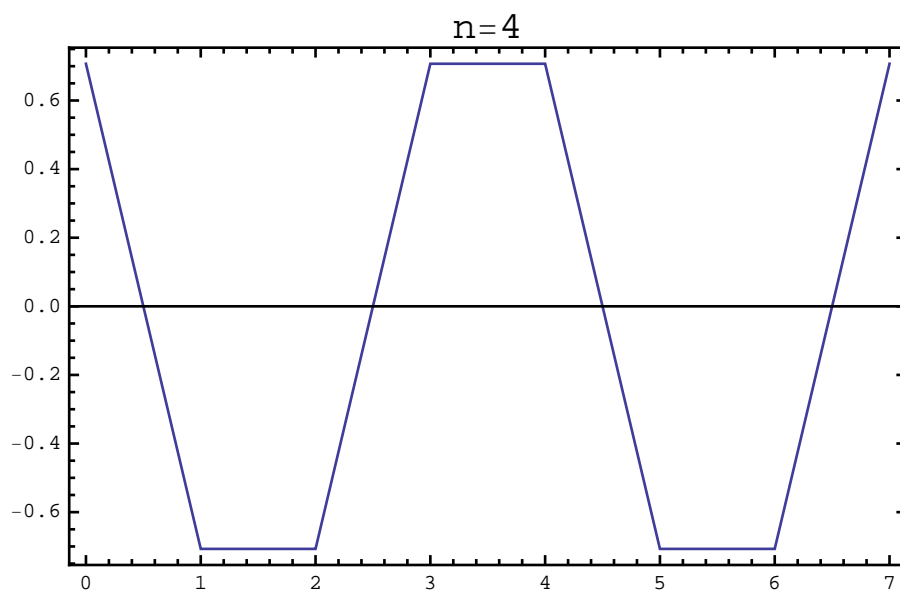
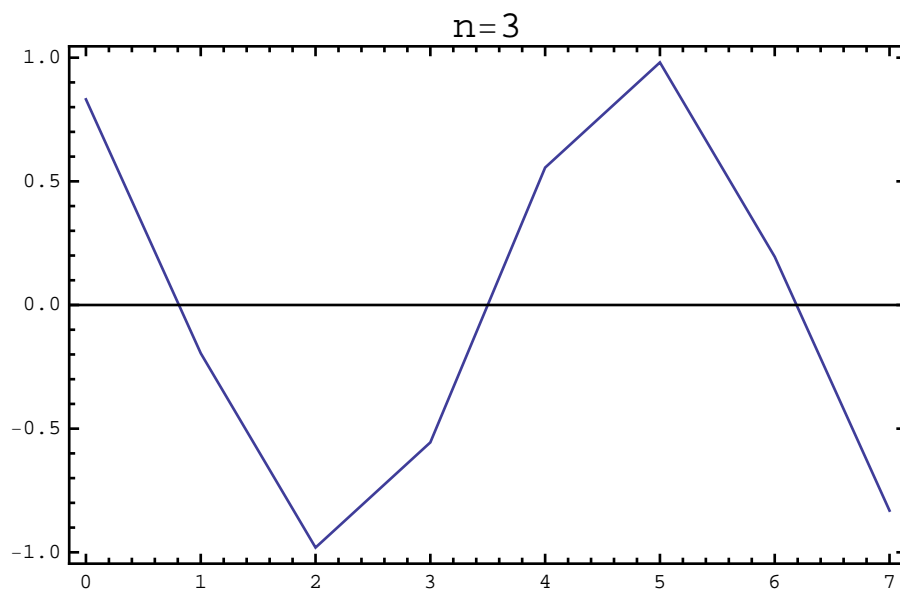
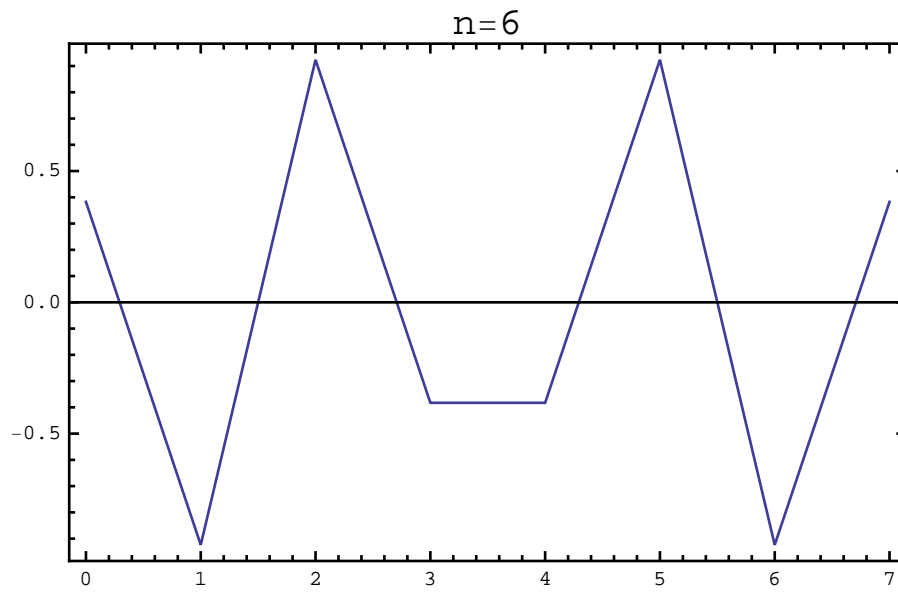
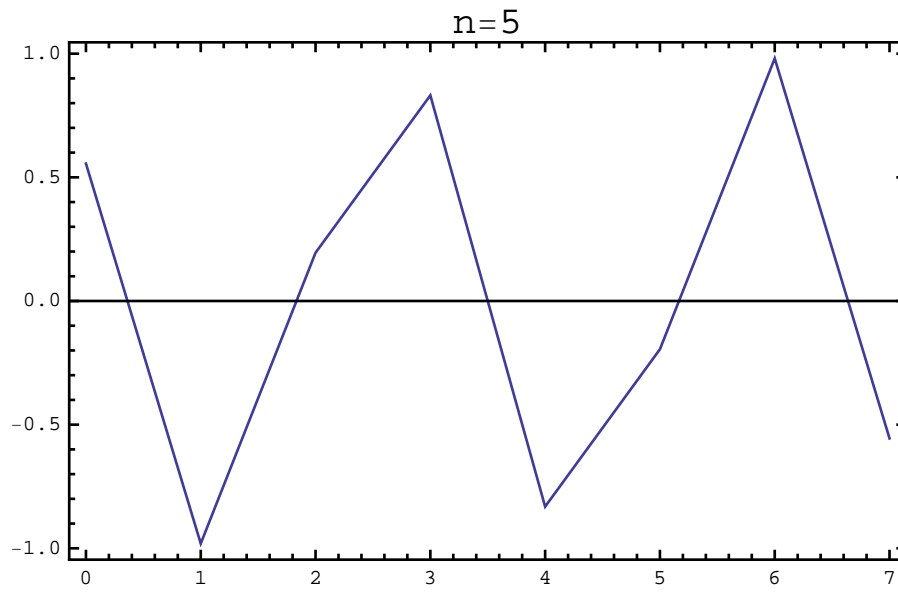

Discrete Cosine Transform

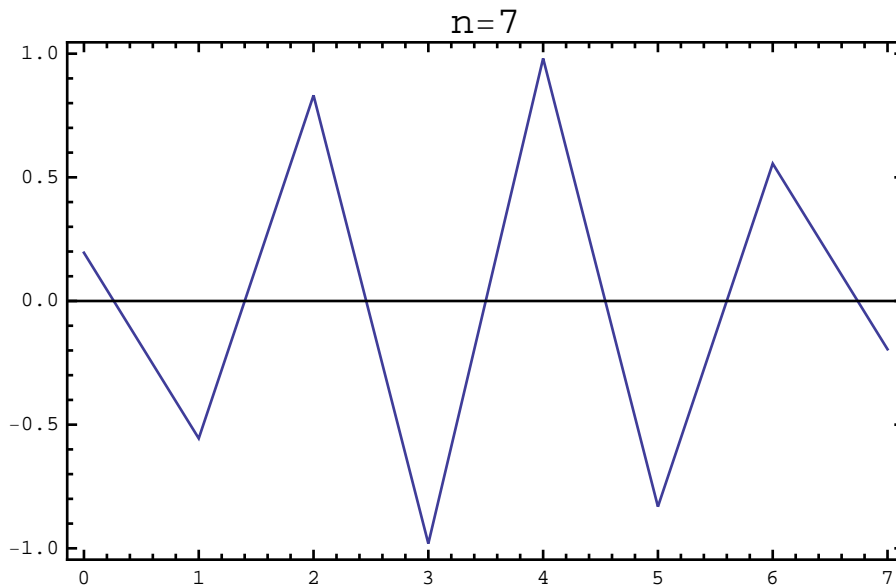
```
c[x_, n_] := Cos[(Pi / 8) n (x + 1 / 2)];  
i = Range[0, 7];  
c0 = c[i, 0];  
  
Do[Print[  
  ListPlot[Transpose[{i, c[i, j]}],  
    Frame → True, Joined → True,  
    PlotLabel → StringJoin["n=", ToString[j]]  
  ],  
  {j,  
    0,  
    7}]
```











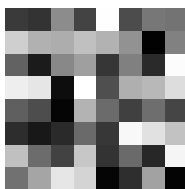
Some built-in functions :

```
Import["image.tif"]
Image[{{0,0,1},{1,0,1},{0,1,0}}]
```

```
image = RandomReal[1, {8, 8}]
```

```
{0.22967, 0.202988, 0.550415, 0.26215, 0.994052,
 0.296916, 0.468405, 0.450041}, {0.811937, 0.694389,
 0.676332, 0.75283, 0.6973, 0.573772, 0.01139, 0.505088},
 {0.384276, 0.10869, 0.533521, 0.623319, 0.214694, 0.502502,
 0.164339, 0.987229}, {0.933364, 0.899881, 0.0532971,
 0.997447, 0.311275, 0.685614, 0.720522, 0.866023},
 {0.374456, 0.301884, 0.0202653, 0.700069, 0.421401,
 0.252841, 0.433133, 0.270449}, {0.179542, 0.0965384,
 0.16528, 0.417676, 0.21651, 0.972186, 0.880228, 0.759183},
 {0.752242, 0.423489, 0.261069, 0.78008, 0.202935, 0.416531,
 0.155071, 0.958563}, {0.443784, 0.647653, 0.89907,
 0.828456, 0.0199511, 0.182168, 0.634576, 0.0160293}}
```

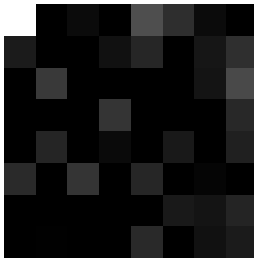
```
Image[image]
```



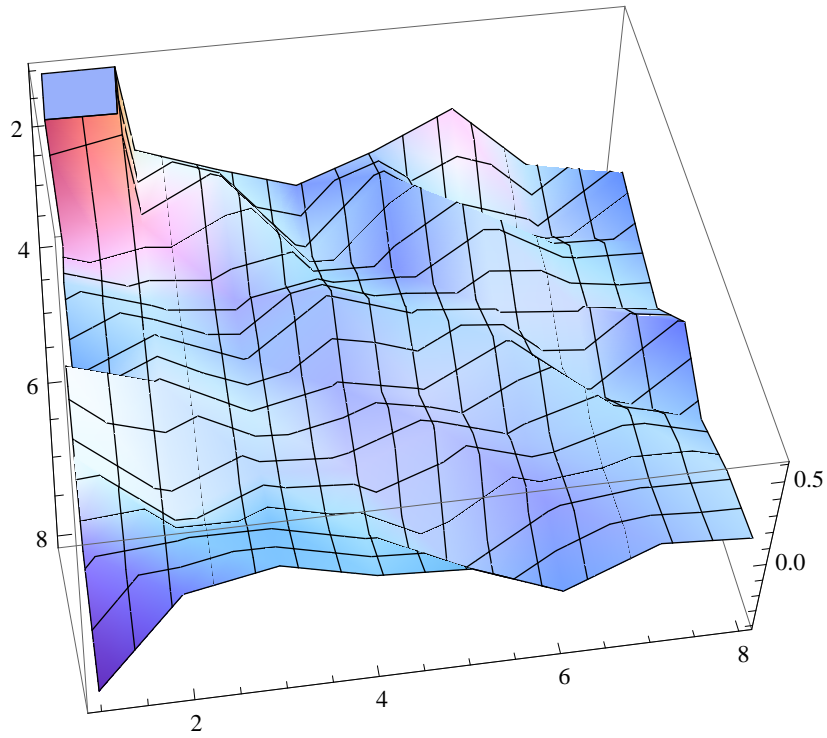
```
dct = FourierDCT[image]
```

```
{{3.90587, -0.0903387, 0.0461324,  
  -0.140789, 0.307332, 0.182191, 0.0459792, -0.365929},  
 {0.107701, -0.00473213, -0.114952, 0.0665243, 0.152248,  
  -0.259961, 0.0866952, 0.187001}, {-0.0586456, 0.223824,  
  -0.168359, -0.140863, -0.111248, -0.0498565, 0.0805425, 0.28899},  
 {-0.207758, -0.308802, -0.080366, 0.205988, -0.0055104,  
  -0.0868414, -0.0510239, 0.158379}, {-0.0451212, 0.145804,  
  -0.0953603, 0.0416887, -0.108693, 0.100492, -0.320343, 0.126812},  
 {0.165926, -0.17321, 0.20543, -0.00859058, 0.150774, -0.0555701,  
  0.0230322, -0.0856417}, {-0.222817, -0.333963, -0.0538329,  
  -0.0577669, -0.226878, 0.0988731, 0.0810027, 0.142146},  
 {-0.406647, 0.00682125, -0.0718923, -0.129743,  
  0.162929, -0.0332713, 0.0701338, 0.107285}}
```

```
Image[dct]
```



ListPlot3D[dct]



Are we having fun yet?