

**Homework 2: Contrast Sensitivity**  
**20 Points: Due at the beginning of class, Wednesday, 15 June 2005**

There are two parts to this homework assignment. Each part counts 10 points. Late homework will receive a grade of zero.

**Part 1:**

In the table below are given the contrasts for detecting (at  $d_a = 1.0$ ) sine wave gratings of various spatial frequencies. Assume that stimuli having amplitude less than these values would not be visible.

cpd	contrast
0.19	0.0450
0.21	0.0363
0.25	0.0302
0.38	0.0180
0.53	0.0155
0.75	0.0140
1.10	0.0126
1.50	0.0132

cpd	contrast
1.60	0.0150
1.80	0.0166
2.13	0.0250
3.00	0.0350
3.70	0.0676
4.25	0.1580
5.30	0.302
6.00	0.562

- Will a 3.0 cpd sine wave grating with contrast of 0.05 be visible? Why?
- Will a square wave grating with a period of 0.3333 degrees, having a fundamental Fourier component with contrast of 0.01 be detectable? Why?

**Part 2:**

Use the contrast threshold data in the table and plot a graph of the contrast sensitivity function with contrast sensitivity ( $S=1/c$ ) on the vertical axis and spatial frequency on the horizontal axis. The graph should have both axes in logarithmic coordinates.