# Topic 4 problems

1. Write a function `centrerect.m` that gives the screen coordinates that centre an image inside a rectangle. The function should take two arguments: `bigRect`, the corners of a screen rectangle in Psychtoolbox format, i.e., `[ x1 y1 x2 y2 ]`; and `dim`, the size of an image matrix, i.e., `[ m n ]`. The function should return one argument, `smallRect`, that gives the coordinates of the screen rectangle that centres an image of size `dim` inside the rectangle `bigRect`. For example:

```
>> centrerect([ 0 0 100 100 ],[ 10 10 ])

ans =

    45    45    55    55
```

2. Write a script `noisemovie.m` that uses the Psychtoolbox to show an endlessly looping 30-frame movie of white noise. Use `floor(256*rand(256,256))` to get each frame of white noise. Each frame should be 256 × 256 pixels and last for one video frame. Use your solution to problem 1 to centre the frame on the screen.

If you find this easy, show an endlessly looping 30-frame movie of a vertical sine wave smoothly drifting to the right. You can use this movie to generate motion aftereffects, i.e., the waterfall illusion.