Some introductory OCTAVE exercises

(a) Build the following matrix, using as few commands/steps as you can think to do. Record the OCTAVE code you used.

$$\begin{bmatrix} 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \\ -2 & 3 & -1 & 4 & 1 \end{bmatrix}$$

(b) In the diary/record of Octave commands you read through, I show an example of plotting sine and cosine curves together on one set of coordinate axes. Investigate the `hold` command as an alternate means for putting two graphs together. Begin by reading the help screen, typing

```
help hold
```

Then write a sequence of commands which begins with these two

```
xs = 0:0.1:2*pi;
plot(xs, sin(xs), 'b')
```

and produces a similar result (sine and cosine graphs together, the one colored blue and the other colored green).

(c) Today (the day I am typing out this problem) is Friday. Explain how you can use the results of the following commands to determine what day of the week it is exactly 10,000 days from now.

```
x = 0:7:10000;
x(end)
```

(d) What is the significance of the difference between the following lines of code defining a function f?

```
f = @(x,y) x^2 - 2xy
```

vs.

```
f = @(x,y) x^2 - 2*x.*y
```

vs.

```
f = @(x,y) x.^2 - 2*x.*y
```

As you progress from the third backwards to the first of these, what capabilities are lost?