Contents

```
%1a

x1 = [0 1 2 3 4];
x2 = [-2 -1 0 1 2];
x3 = ifft( fft(x1,7) .* fft(x2,7));

fprintf('1a, 7-point circular convolution \n');
for i=1:length(x3)
    fprintf('%.2f\n',x3(i));

end
```

```
1a, 7-point circular convolution
10.00
6.00
-5.00
-8.00
-10.00
-0.00
7.00
```

1b

```
y = conv(x1,x2);

fprintf('1b, linear convolution \n');
for i=1:length(y)
    fprintf('%.2f\n',y(i));
end

x_test = ifft( fft(x1,9) .* fft(x2,9));

fprintf('1b, N = 9-point circular convolution \n');

for i=1:length(x_test)
    fprintf('%.2f\n',x_test(i));
end
```

```
1b, linear convolution
0.00
-2.00
-5.00
-8.00
-10.00
0.00
7.00
10.00
```

```
8.00
1b, N = 9-point circular convolution
0.00
-2.00
-5.00
-8.00
-10.00
0.00
7.00
10.00
8.00
```

1c

```
%testing out higher N > 9 point circular convolutions


x_test2 = ifft( fft(x1,10) .* fft(x2,10));

fprintf('1c, N = 10-point circular convolution \n');

for i=1:10
    fprintf('%.2f\n',x_test2(i));
end


x_test3 = ifft( fft(x1,11) .* fft(x2,11));

fprintf('1c, N = 11-point circular convolution \n');

for i=1:10
    fprintf('%.2f\n',x_test3(i));
end


x_testN = ifft( fft(x1,100) .* fft(x2,100));

fprintf('1c, N = 100-point circular convolution \n');

for i=1:10
    fprintf('%.2f\n',x_testN(i));
end
```

```
1c, N = 10-point circular convolution
0.00
-2.00
-5.00
-8.00
-10.00
0.00
7.00
10.00
8.00
0.00
1c, N = 11-point circular convolution
```

```
0.00
-2.00
-5.00
-8.00
-10.00
-0.00
7.00
10.00
8.00
0.00
1c, N = 100-point circular convolution
0.00
-2.00
-5.00
-8.00
-10.00
0.00
7.00
10.00
8.00
0.00
```