

Homework 4

A6.9d

```
n = 100
```

```
n = 100
```

```
a = randn(n, 1);  
b = randn(n, 1);  
A = toeplitz(a, [a(1), flipud(a(2:n))']');
```

```
tic  
x = A \ b
```

```
x = 100×1  
-0.0907  
-0.0618  
-0.0986  
-0.2964  
-0.0385  
-0.0552  
0.0717  
0.0408  
-0.4898  
0.2229
```

```
toc
```

Elapsed time is 0.070788 seconds.

```
tic  
trans = fft(x)
```

```
trans = 100×1 complex  
2.7931 + 0.0000i  
-0.3835 + 1.0354i  
-1.7540 + 0.1027i  
0.5661 + 4.8063i  
2.5113 + 1.0524i  
-0.4171 + 0.4440i  
-0.0286 + 0.0081i  
0.9798 - 0.4015i  
-1.9451 + 1.4526i  
1.3681 - 0.5175i
```

```
toc
```

Elapsed time is 0.099894 seconds.

```
tic  
ifft(trans)
```

```
ans = 100×1  
-0.0907  
-0.0618  
-0.0986  
-0.2964  
-0.0385  
-0.0552  
0.0717  
0.0408  
-0.4898  
0.2229
```

```
toc
```

Elapsed time is 0.017922 seconds.