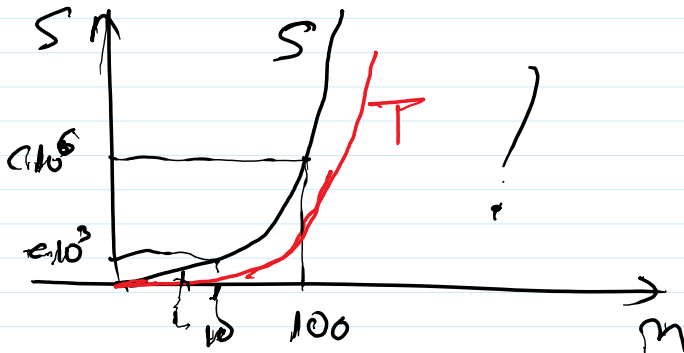


(U παραφορτωμένοι κόστος $O(n^3)$)

$$S = e n^3 \quad \text{Παράδοχος ροτήσεων}$$



↓ ροτήτων κόστος $t_c \rightarrow$ $T = e t_c n^3$

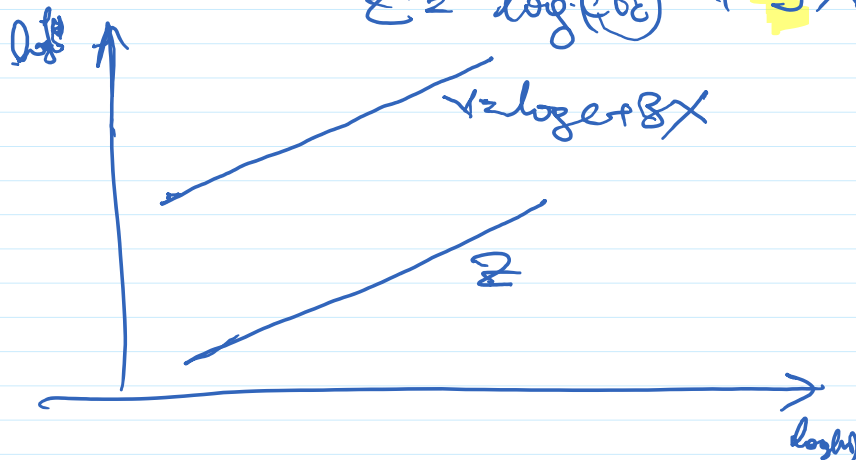
$$S = e n^3 \rightarrow \log S = \log(e n^3) = \log e + 3 \log n$$

$$T = e t_c n^3 \rightarrow \log T = \log(e t_c n^3) = \log(e t_c) + 3 \log n$$

\times

$$V = \log e + 3X$$

$$Z = \log(e t_c) + 3X$$



ευθείες
μόλις παρουν (1/3)
↓

$$S = c n^3$$



Experiment

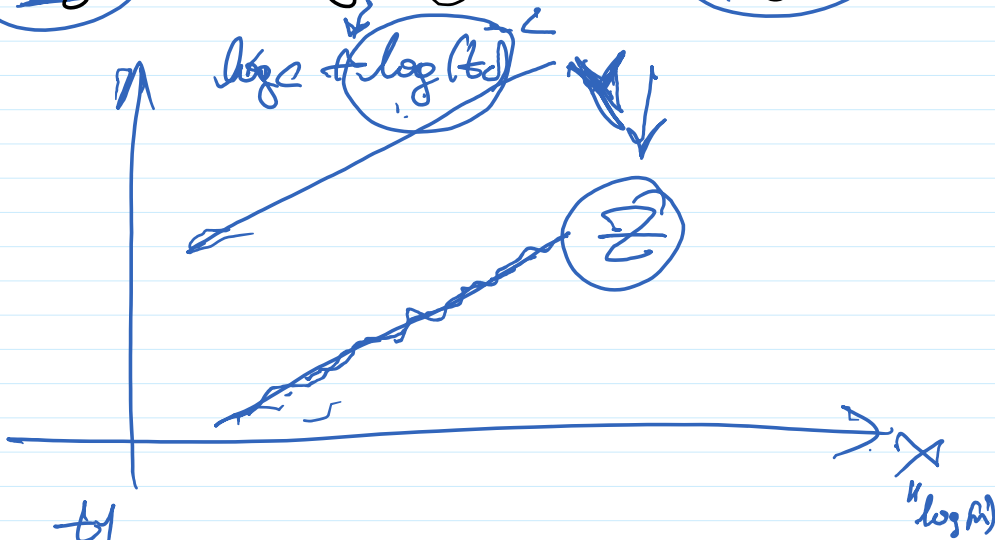
$$n=10, t=1$$

$$n=100, t=8$$

$$n=1000, t=60$$

$$\log S = \log c + 3 \log n$$

$$\log T = \log f(t) + 3 \log n$$



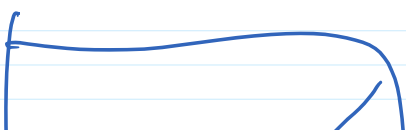
for $i=1:5$

block

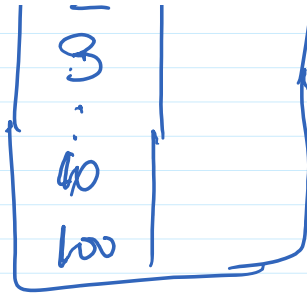
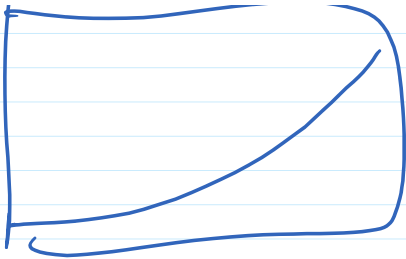
end

t2

$$(t2 - t1)$$



| n → t | |
|-------|---|
| n | t |
| 1 | . |
| 2 | |
| 3 | |



```
clear all;
n=(50:50:400);
```

Διαστάσεις συντάξης
50, 100, 150, 200, 250, 300, 350, 400

```
for ii = 1:length(n)
```

```
nn = n(ii);
```

```
a = rand(nn,nn);
```

```
tStart = tic;
```

```
for j=1:5 [l,u] = my_lu(a); end
```

```
time(ii)=toc(tStart)/5
```

```
end
```

```
%% grafikh anaparastash xronou kai
```

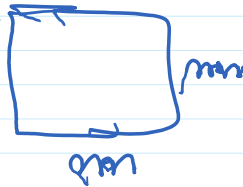
```
ypologistikou kostous
```

```
figure(11)
```

```
plot(n,time,n, 2*n.^3/3)
```

```
figure(10)
```

```
loglog(n,time,n, 2*n.^3/3)
```



Σφοδρ LU
παράγει τα A

Διαμόρφωση κώδικα

$X = \text{upper_solve}(U, y)$

Λύση στο $Ux=y$

Βασικός σπορφα House :

- U είναι αντιστρέψιμη παραγοντική

- U είναι $Ux=y \rightarrow$ εύκολη αντιστροφή

- $Ux=y \Rightarrow$

$$\begin{matrix} \downarrow \\ Ux = y \\ \text{m} \quad \text{R} \end{matrix}$$

51K

Lipschitz U_x to y how $\|U_x - y\|_{\frac{1}{2}}$
 $\in \mathbb{R}^m$

