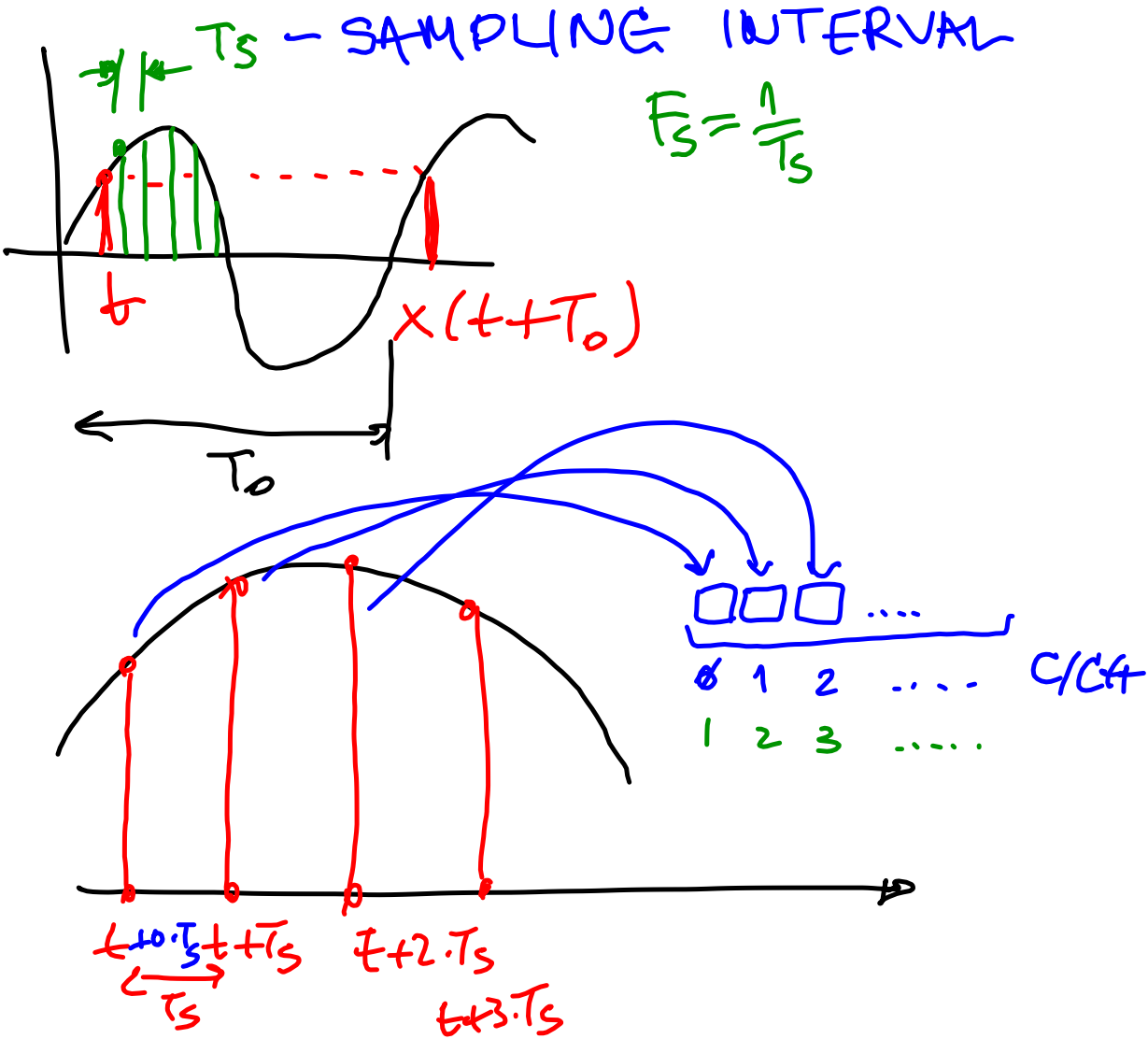
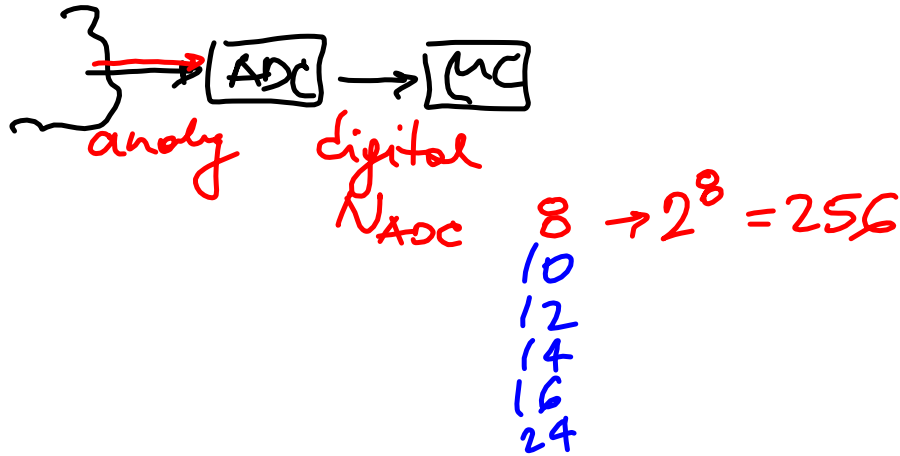
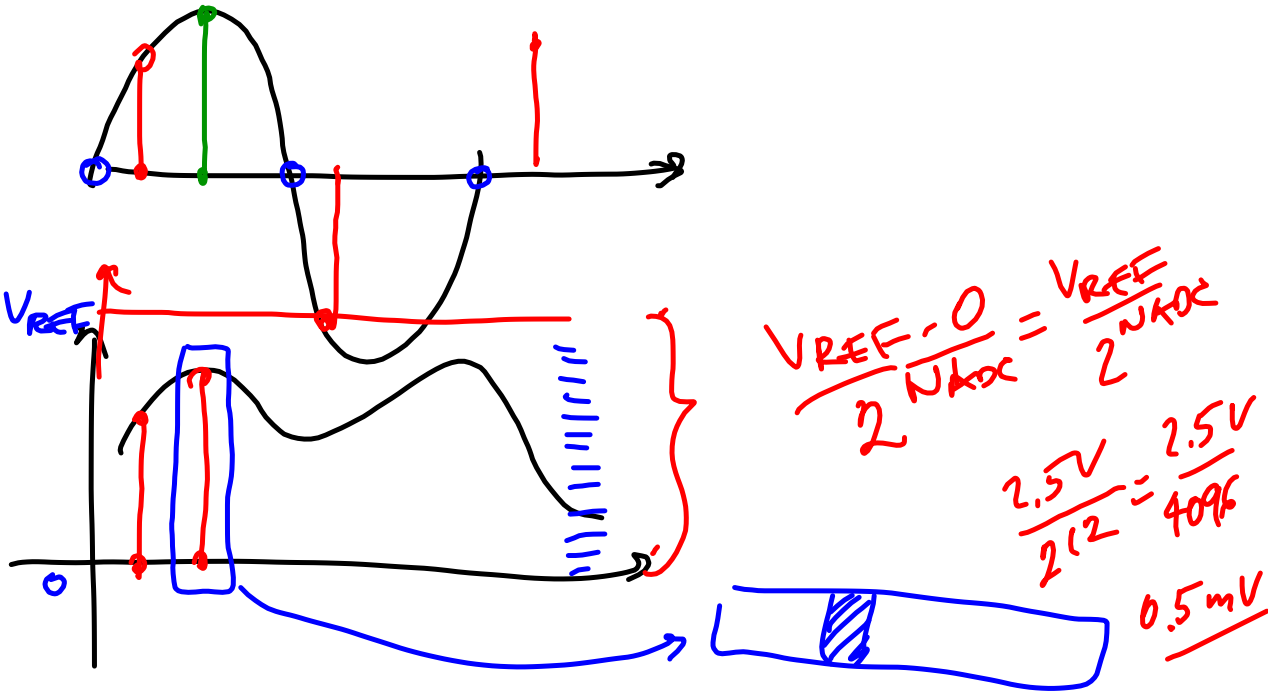
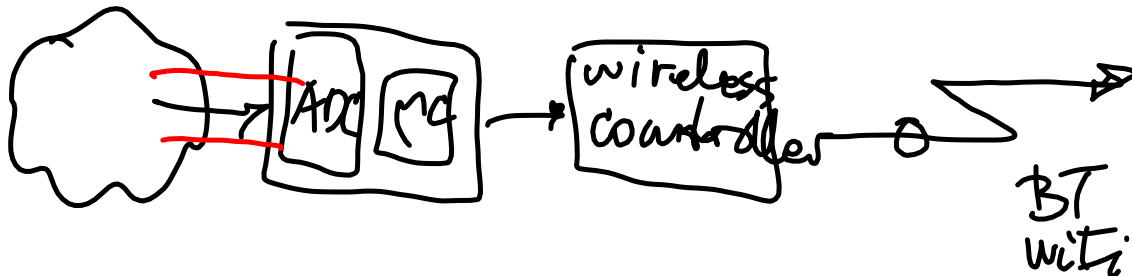


CPE381#4

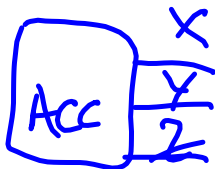






$$BW = \# \text{ of chan} \cdot F_s \cdot N_{\text{acc}}$$

Samp-freq



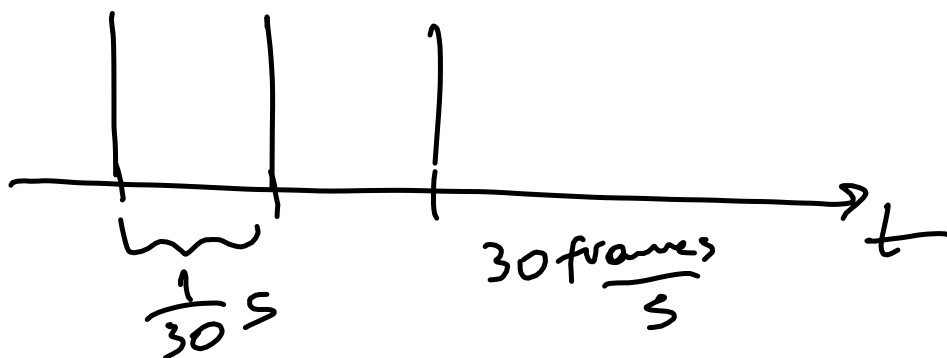
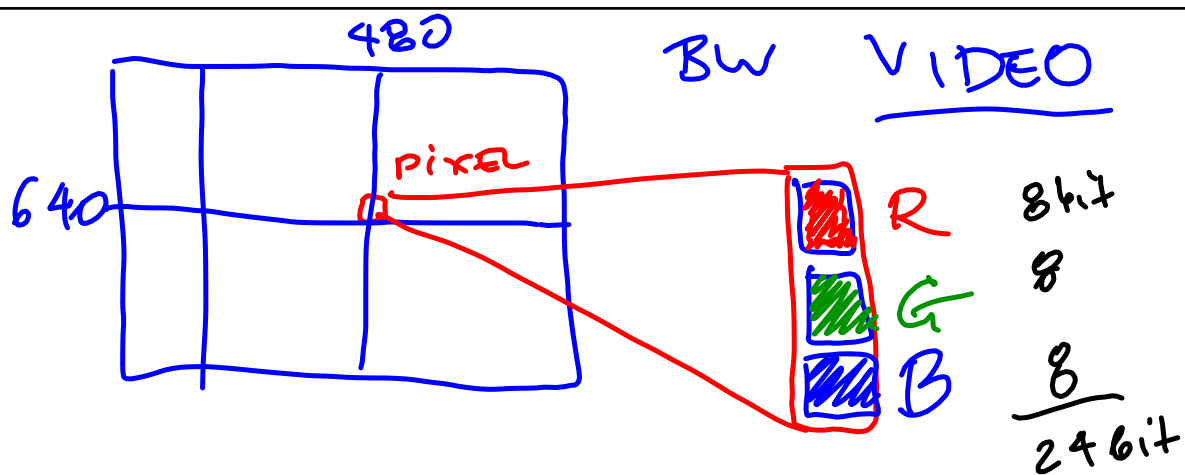
$$BW = 3 \cdot 100[\text{Hz}] \cdot 12$$

$$BW = 3 \cdot 100 \frac{\text{samples}}{\text{s}} \cdot 12 \frac{\text{bit}}{\text{sample}}$$

$$BW = 3600 \frac{\text{b}}{\text{s}}$$

$$OT = \frac{Mem}{BW} = \frac{36000 \cancel{\text{bit}}}{3600 \cancel{\frac{\text{bit}}{\text{s}}}} = 10 \text{ sec}$$

OPERATION TIME



$$BW = \underbrace{f_s}_{30} \cdot \underbrace{640 \cdot 480}_{\text{resolution}} \cdot \underbrace{3}_{\text{components}} \cdot \underbrace{1}_{\text{byte}} = \dots$$

AUDIO

- 1 chan (MONO)
- 2 chan (STEREO)

$$BW = \# \text{ of chan} \cdot F_s \cdot \text{bits_sample}$$

$$= 2 \cdot 44100 \cdot 16 = \dots$$

$$M = BW \cdot t$$

$$= \left[\frac{\text{bits}}{\cancel{s}} \right] \cdot [\cancel{s}] = [\text{bits}]$$

1 MB \neq 1,000,000 bytes

(*) 1 KB = 2^{10} bytes = 1024

(*) 1 MB = 2^{10} KB = 2^{20} bytes = 1,048,576

(*) 1 GB = 2^{10} MB

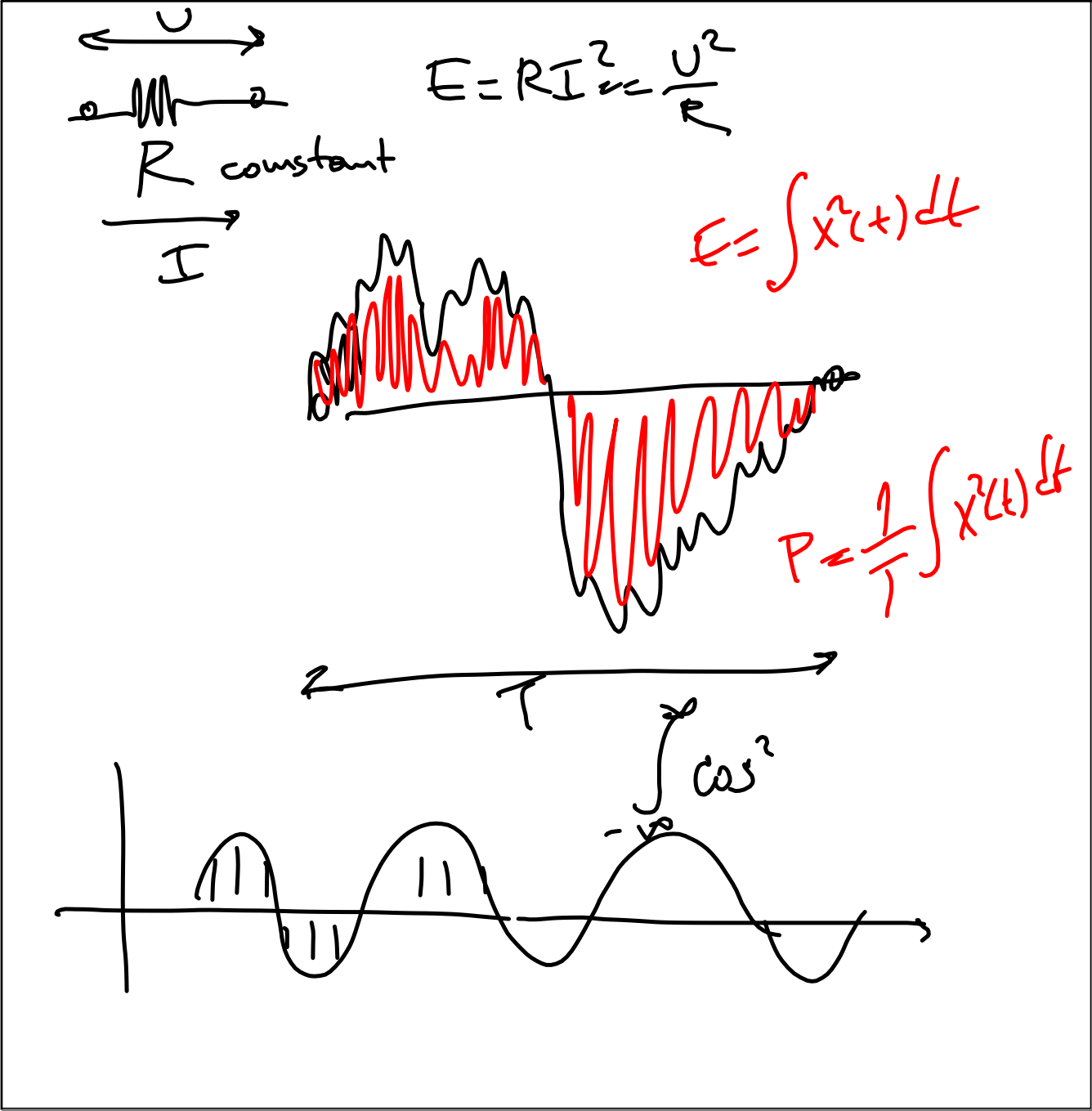


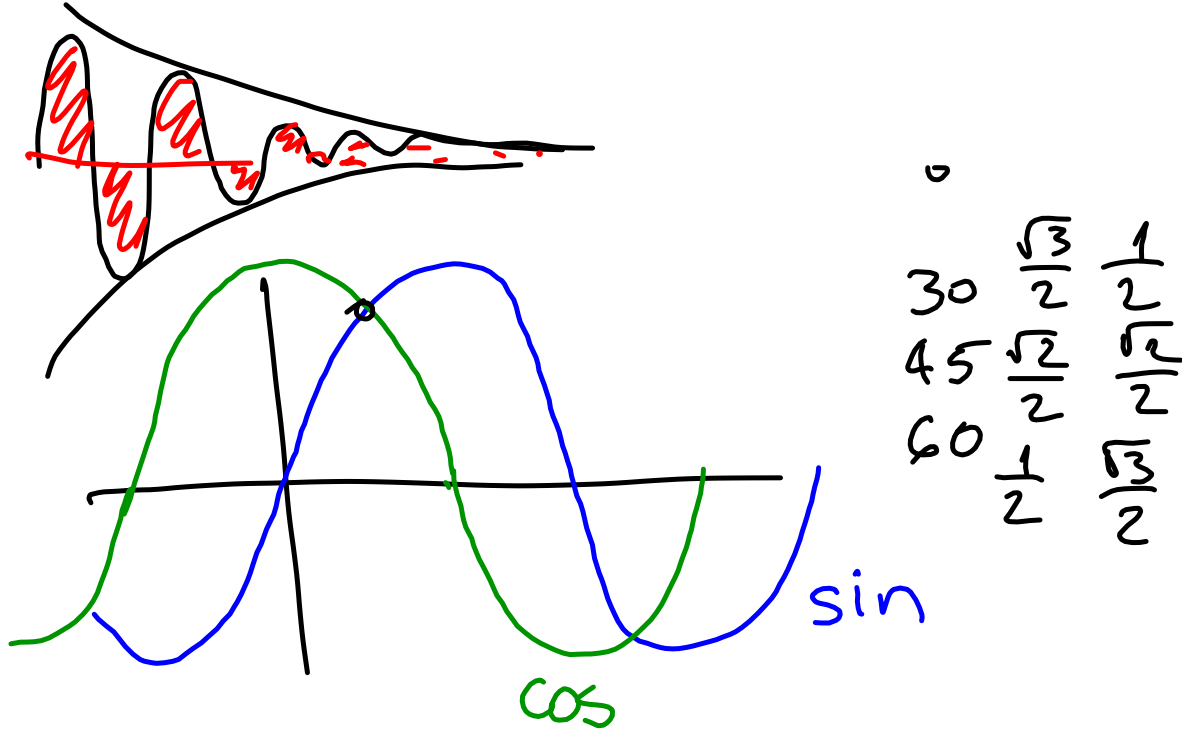
$$\frac{T_0}{T_1} = \frac{N}{M}$$

$$\frac{T_0}{T_1} = \frac{2}{3} \Rightarrow 3 \cdot T_0 = 2 \cdot T_1$$

LCM

	1	2	3	4	5	
0.5s →	0.5	1	1.5			→ times
0.33s →	0.33	0.66	0.99	1 1/3	1 2/3	
1/3 →	1/3	2/3	1	1 1/3	...	





INTEGRALS

$$\int x^n dx = \frac{1}{n+1} x^{n+1}$$

$$\int \frac{1}{x} dx = \ln|x|$$

$$\int u dv = uv - \int v du$$

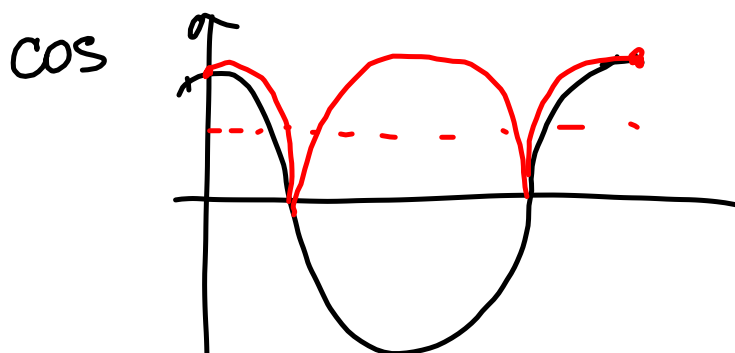
$$\int e^{ax} dx = \frac{1}{a} e^{ax}$$

$$\int \sin(ax) dx = -\frac{1}{a} \cos(ax)$$

$$\int \cos(ax) dx = \frac{1}{a} \sin(ax)$$

$$\int \sin^2(ax) dx = \frac{x}{2} - \frac{\sin(2ax)}{4a}$$

$$\int \cos^2(ax) dx = \frac{x}{2} + \frac{\sin(2ax)}{4a}$$



$$\frac{1}{T} \int_0^T \cos^2 x dx = \left. \frac{x}{2} + \frac{\sin(2x)}{4} \right|_0^T$$

$$= \frac{1}{T} \left(\frac{T}{2} - \cancel{\frac{0}{2}} + \int_0^T \frac{\sin(2x)}{4} - \cancel{\frac{\sin(0)}{4}} \right)$$

$$= \underline{\underline{0.5}} \quad 0 \quad 0 \quad 0$$