



# PROJETO COMPUTAÇÃO GRÁFICA

## TRABALHO A

<b><u>Nome</u></b>	<b><u>Número</u></b>
Diogo Melita	ist199202
João Rocha	ist199256

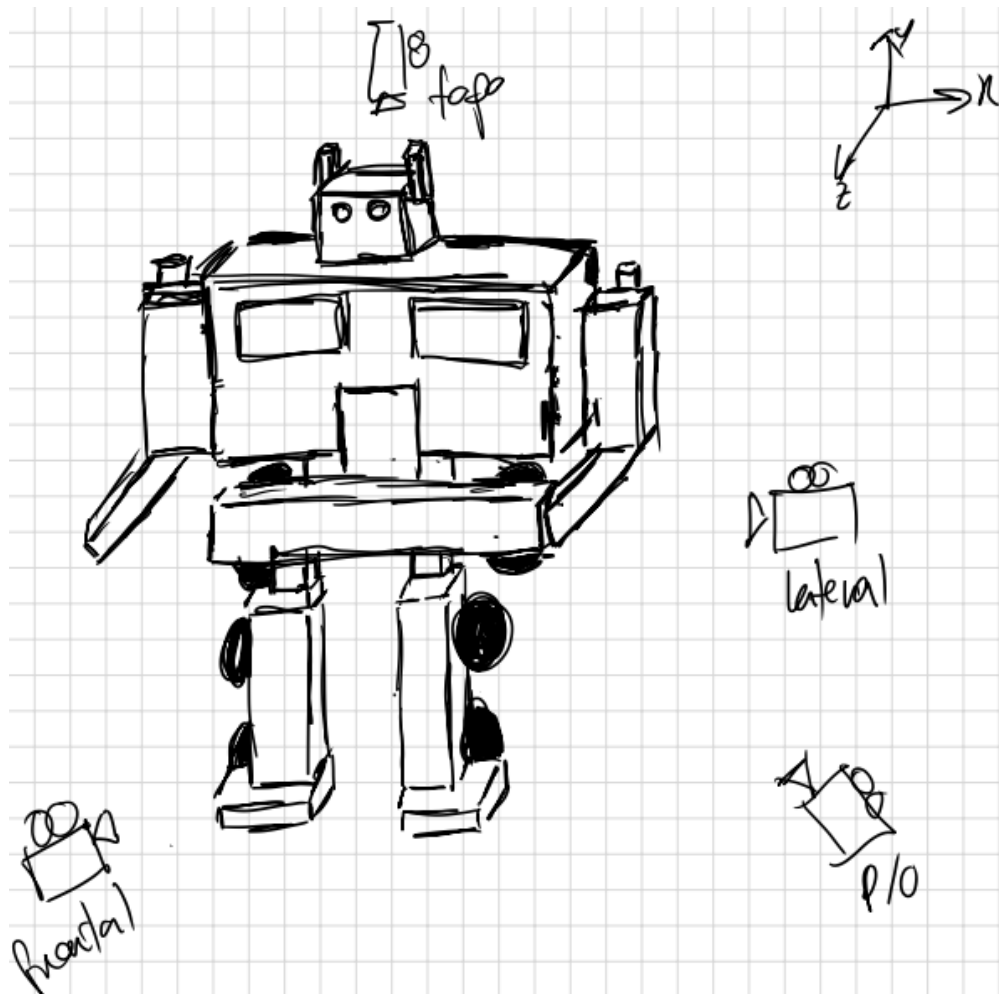
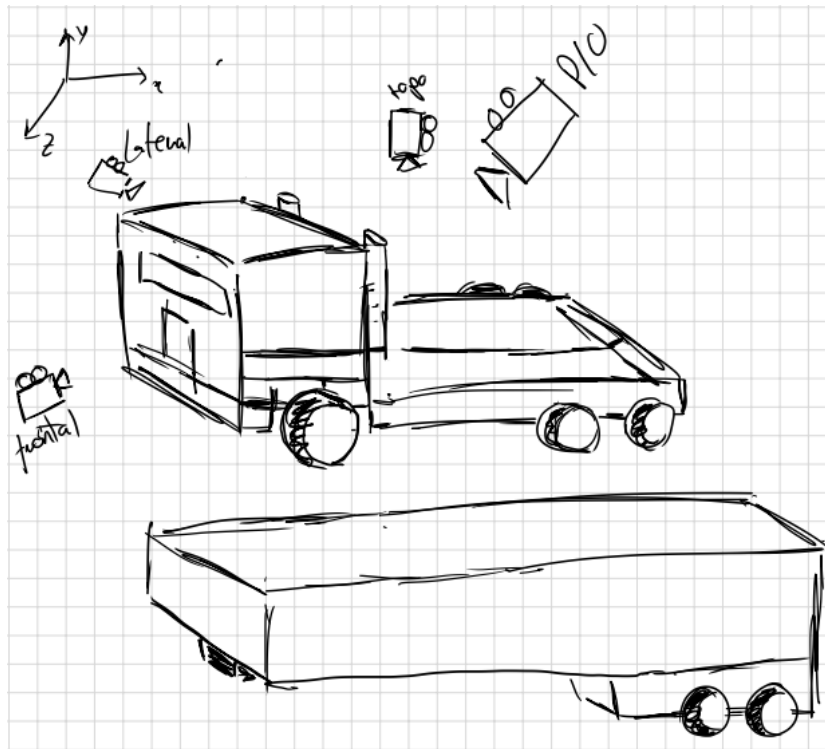
L12 – Prof. Afonso Carvalho

Horas Despendidas: 8 horas

Computação Gráfica  
4º Período, 2º Semestre, Ano Letivo 2022/2023  
Licenciatura em Engenharia Informática e de Computadores – Alameda  
12 de maio de 2023

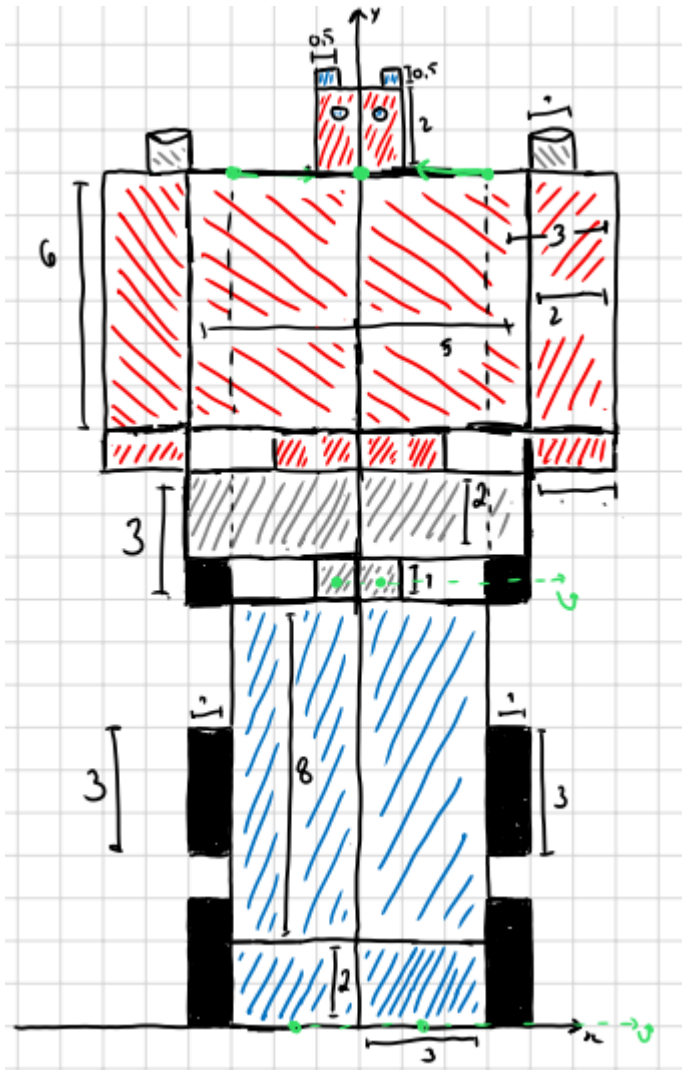
## Trabalho B

1.

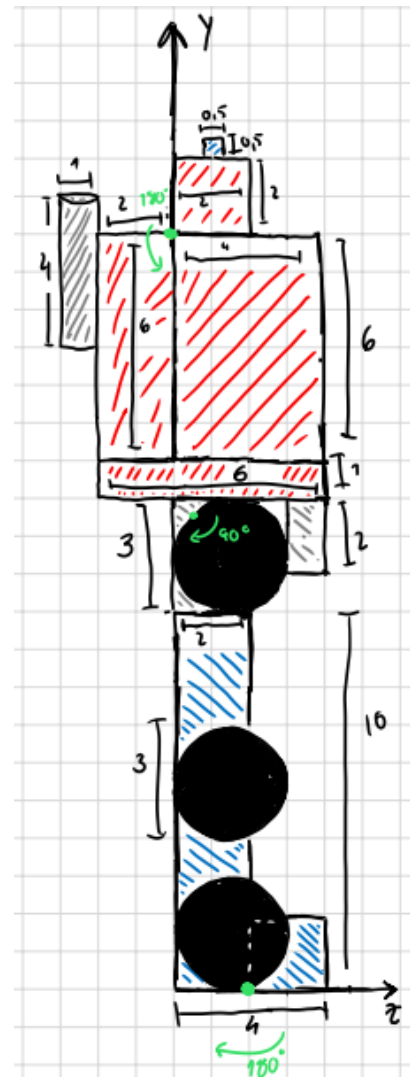


## 2. Transformer

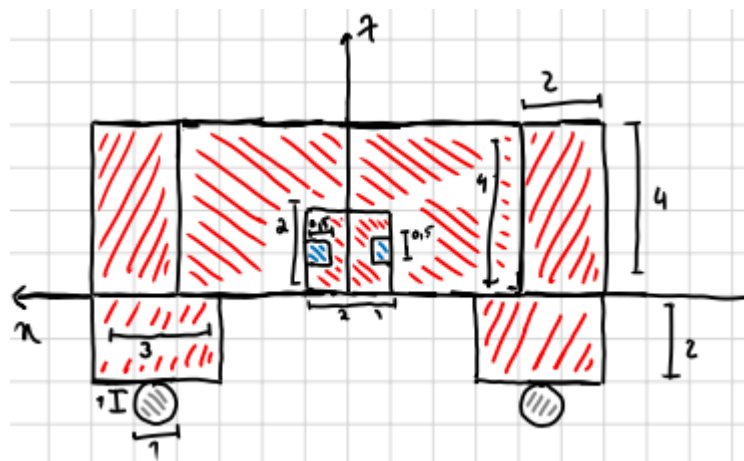
### Vista Frontal



## Vista Lateral

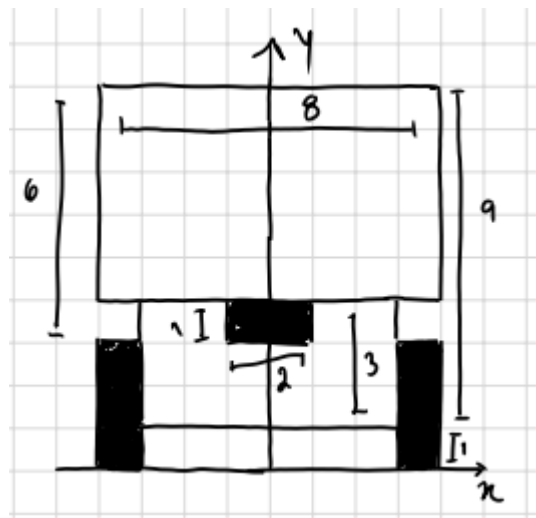


## Vista Superior

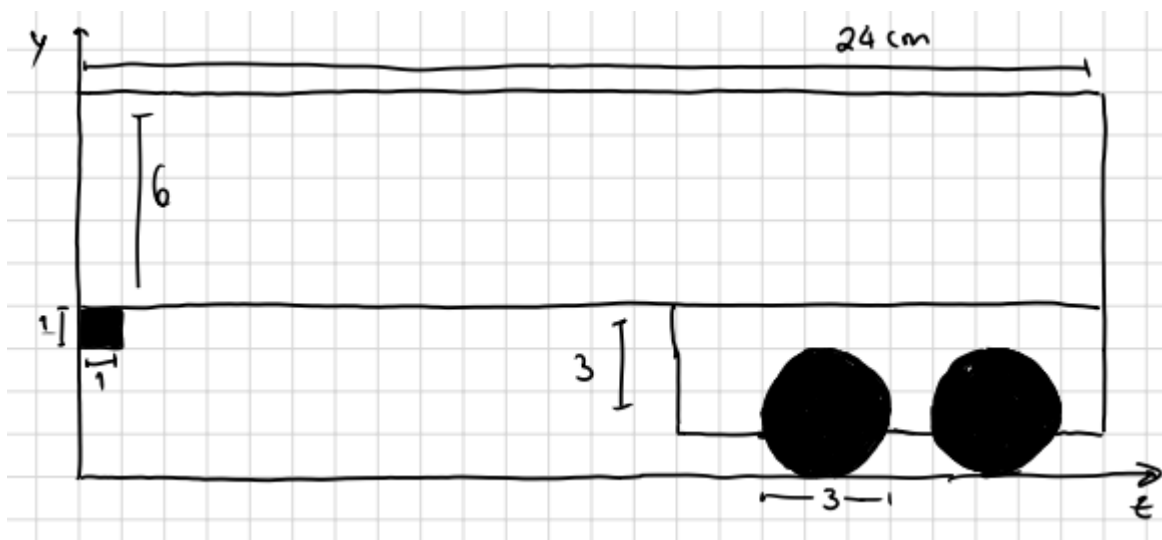


## 2. Atrelado

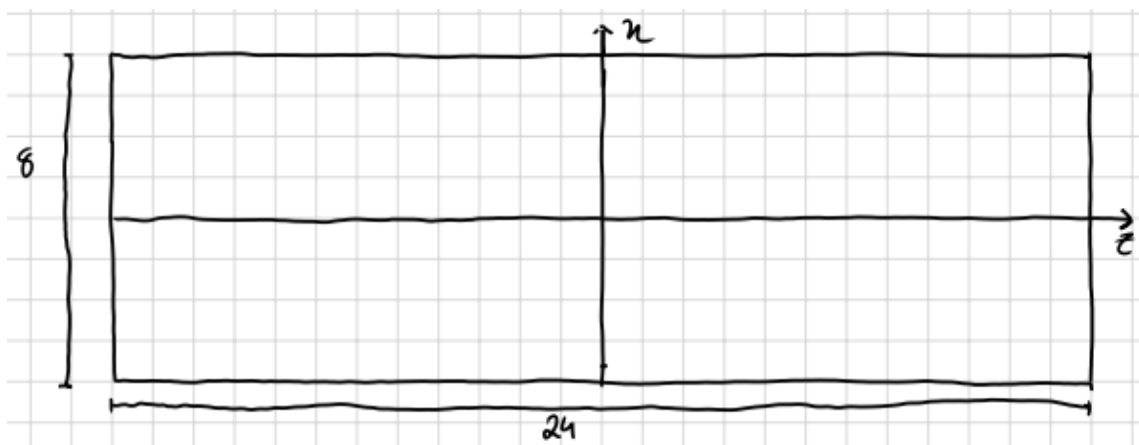
Vista Frontal



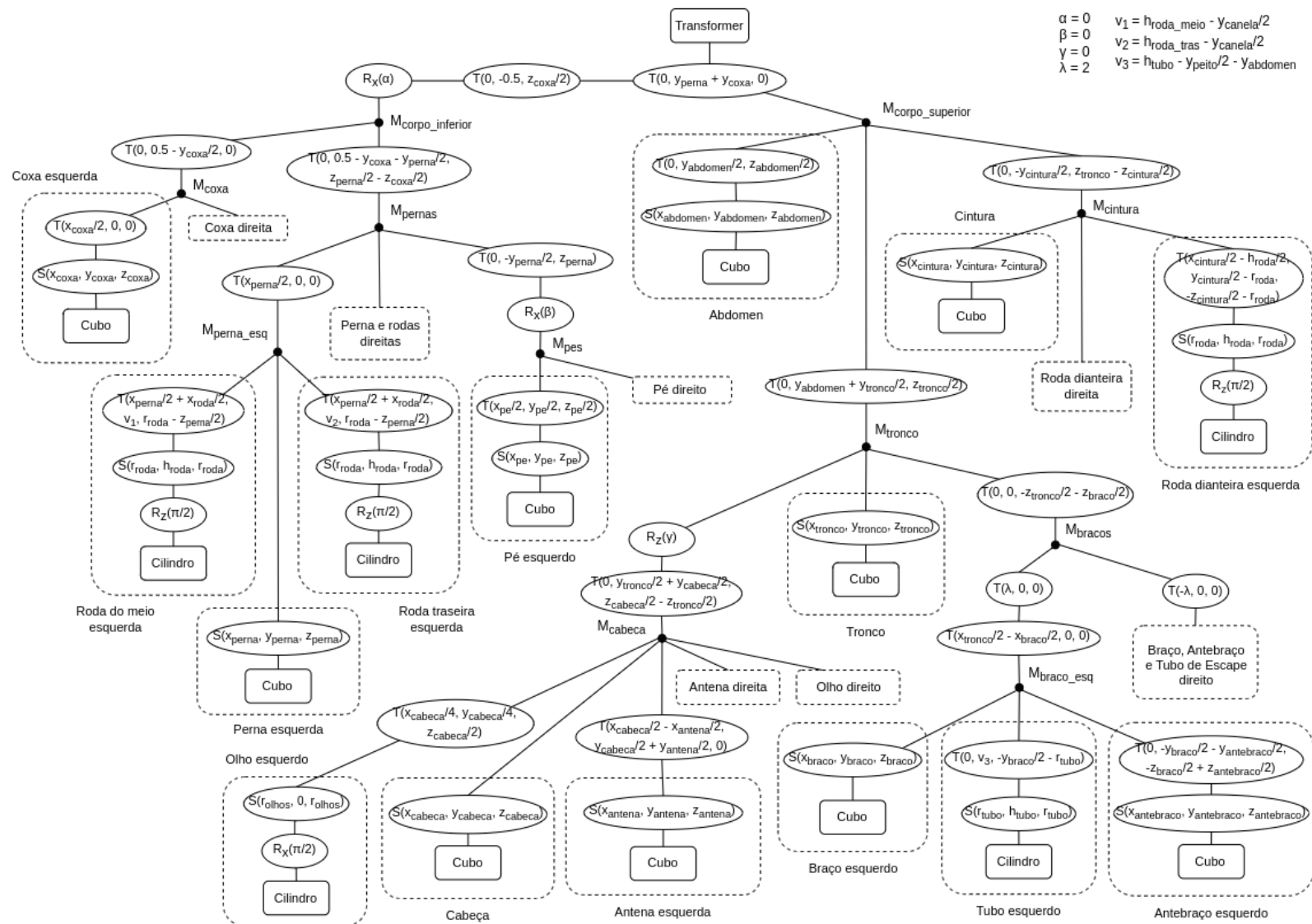
Vista Lateral



Vista Superior

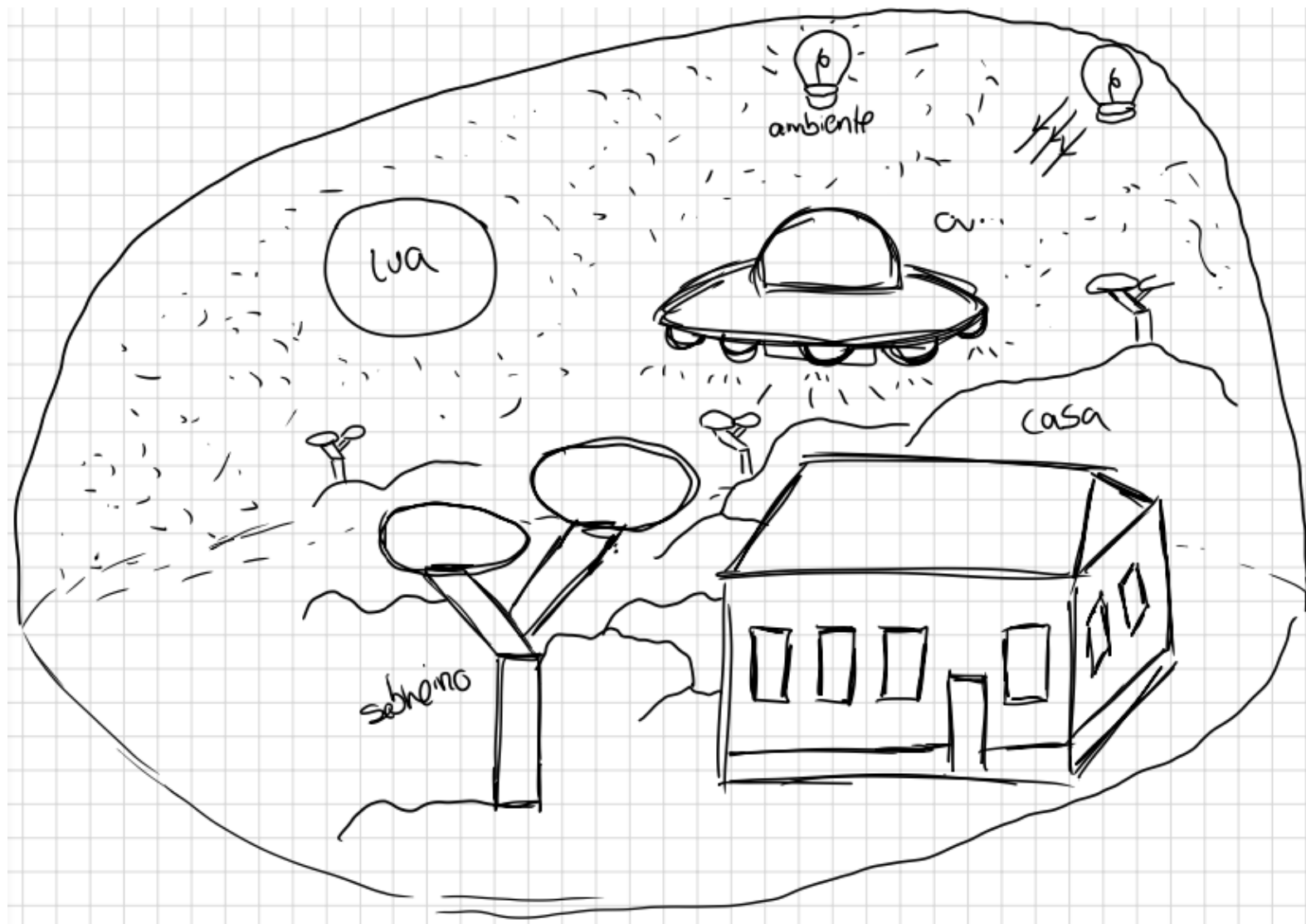


### 3. Grafo de Cena



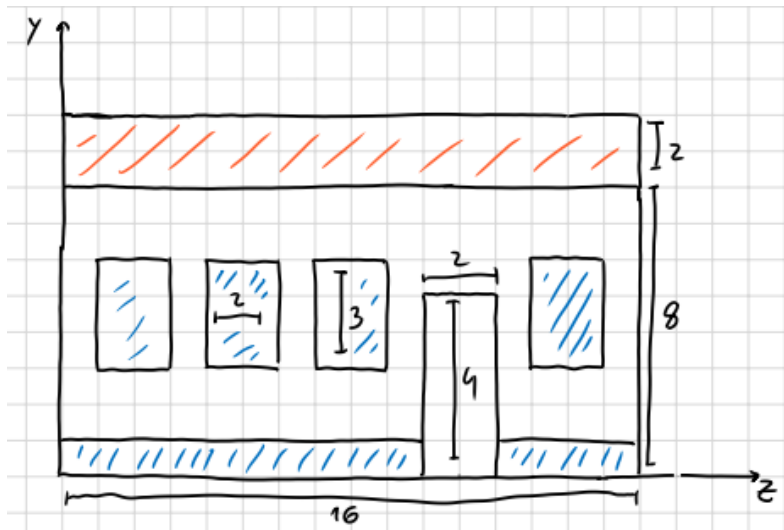
## Trabalho C

1.

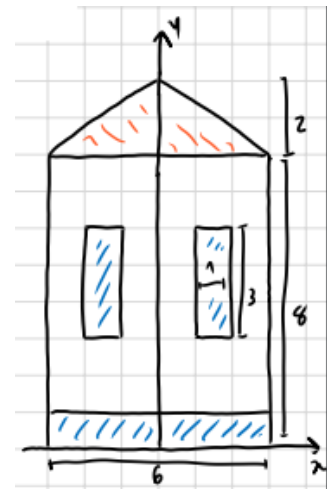


## 2. Casa

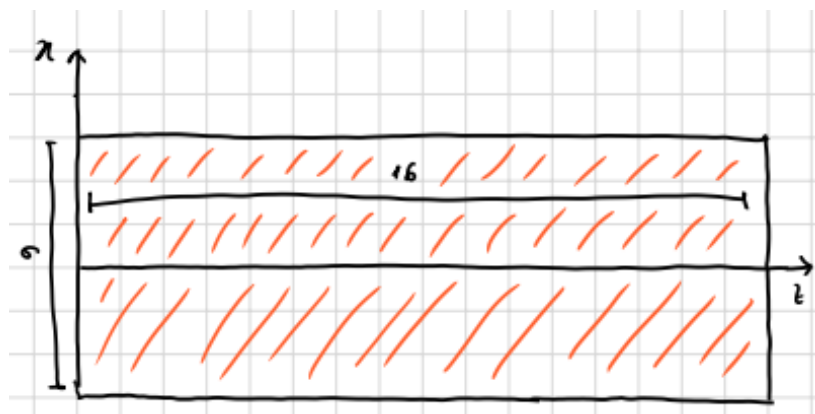
Vista Frontal



Vista Lateral

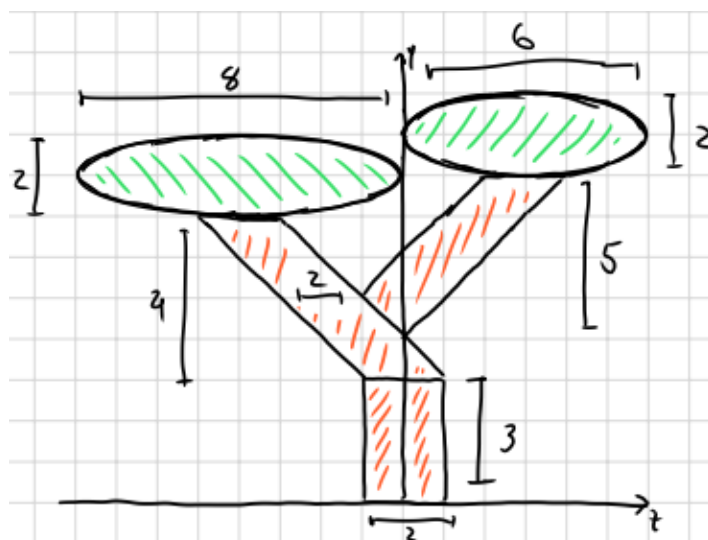


Vista Superior

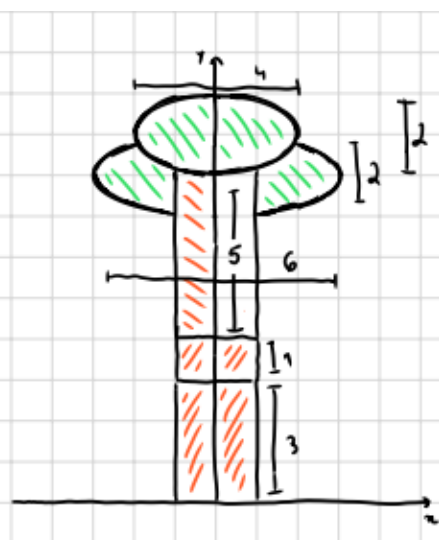


## 2. Sobreiro

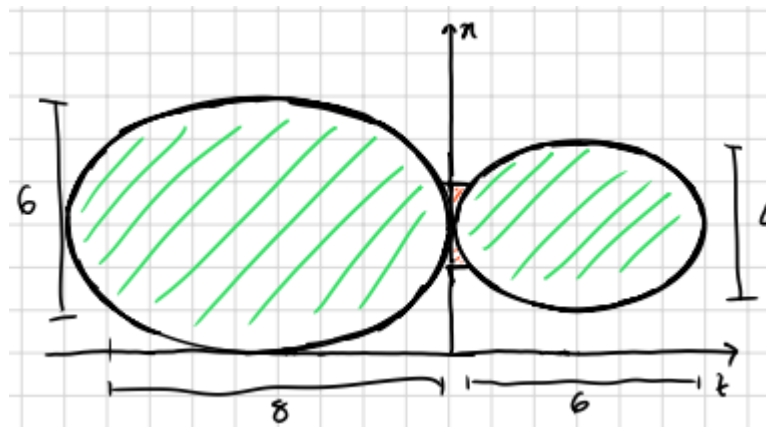
Vista Frontal



Vista Lateral

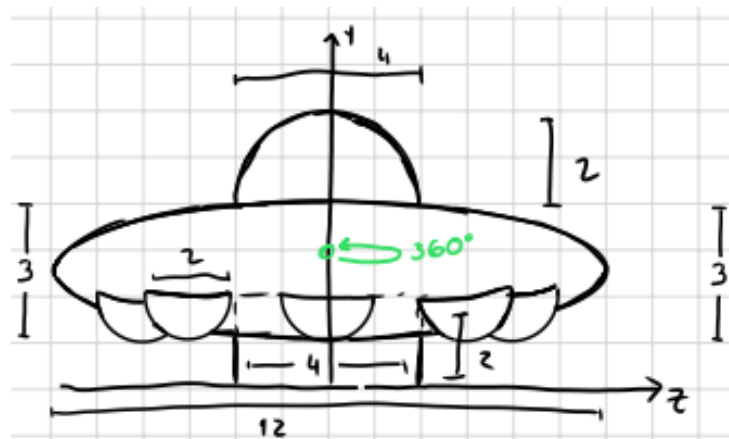


Vista Superior

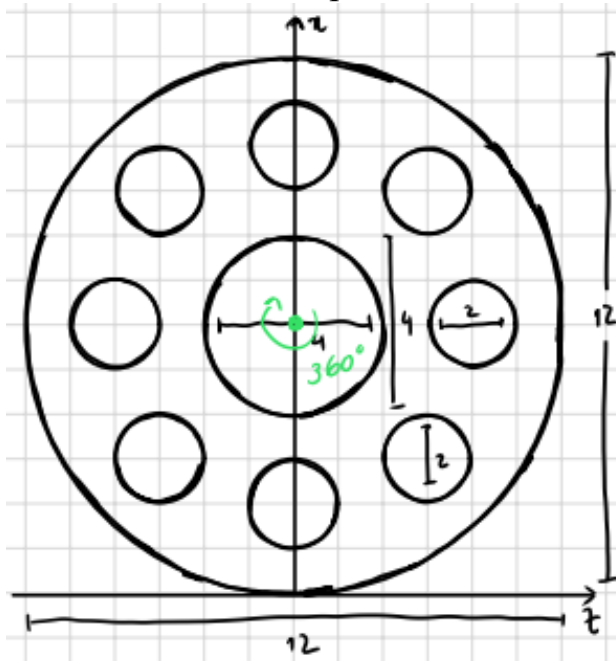


## 2. OVNI

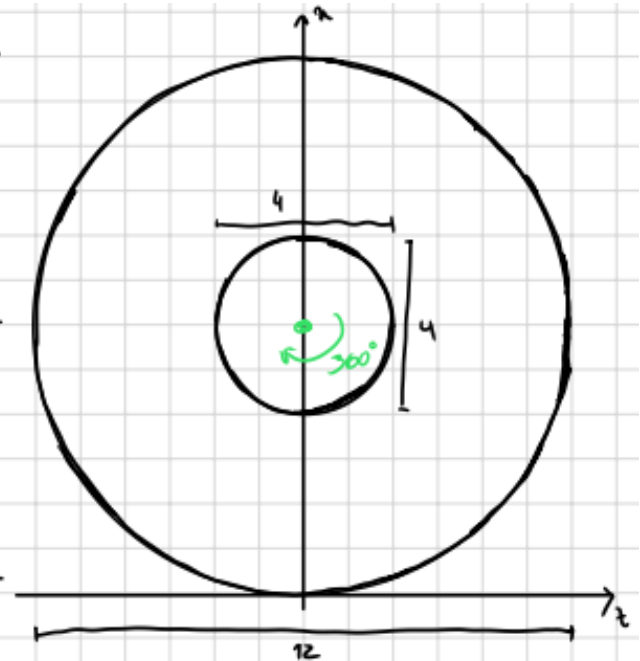
Vista Frontal/Lateral



Vista Superior

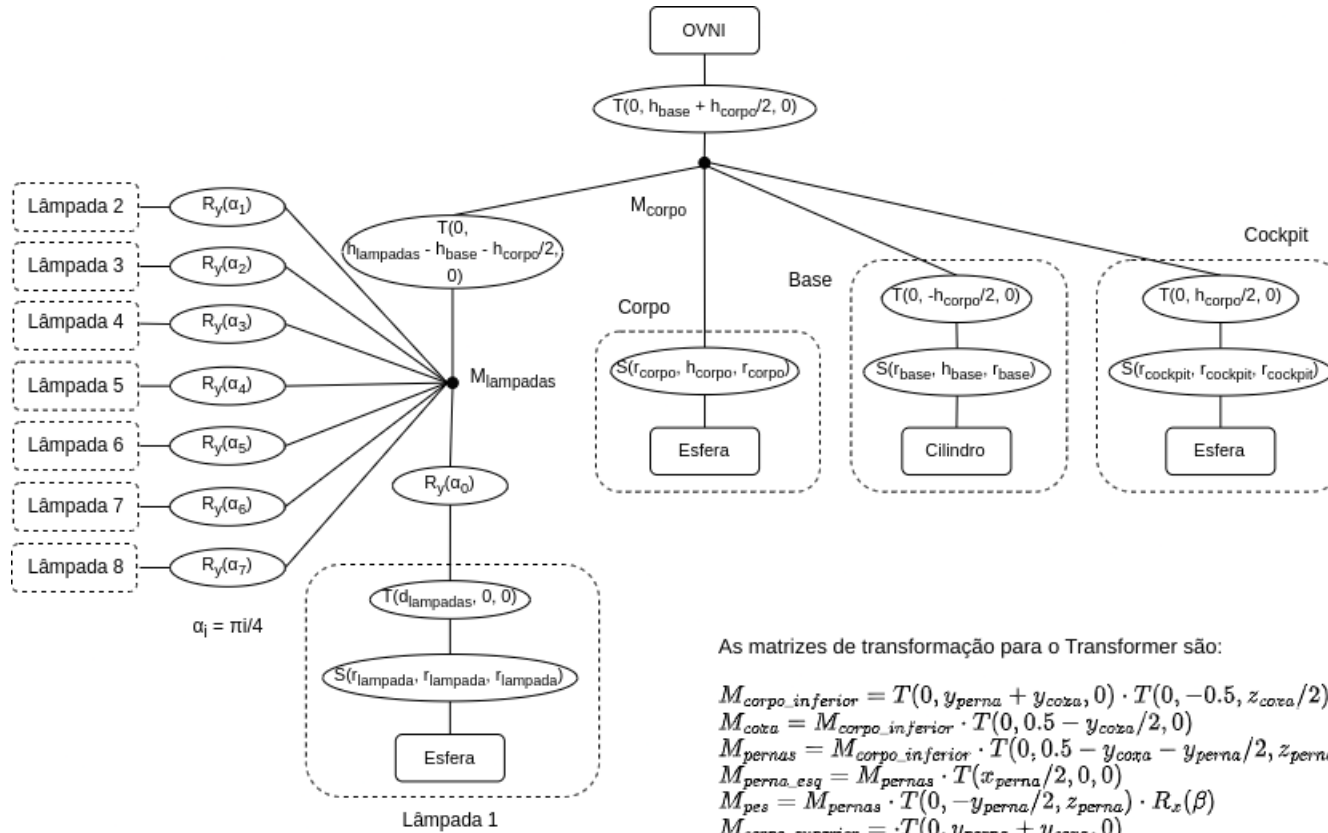


Vista Inferior





### 3. Grafo de Cena



As matrizes de transformação para o Transformer são:

$$\begin{aligned}
 M_{corpo\_inferior} &= T(0, y_{perna} + y_{coxa}, 0) \cdot T(0, -0.5, z_{coxa}/2) \cdot R_x(\alpha) \\
 M_{coxa} &= M_{corpo\_inferior} \cdot T(0, 0.5 - y_{coxa}/2, 0) \\
 M_{pernas} &= M_{corpo\_inferior} \cdot T(0, 0.5 - y_{coxa} - y_{perna}/2, z_{perna}/2 - z_{coxa}/2) \\
 M_{perna\_esq} &= M_{pernas} \cdot T(x_{perna}/2, 0, 0) \\
 M_{pes} &= M_{pernas} \cdot T(0, -y_{perna}/2, z_{perna}) \cdot R_x(\beta) \\
 M_{corpo\_superior} &= T(0, y_{perna} + y_{coxa}, 0) \\
 M_{cintura} &= M_{corpo\_superior} \cdot T(0, -y_{cintura}/2, z_{tronco} - z_{cintura}/2) \\
 M_{tronco} &= M_{corpo\_superior} \cdot T(0, y_{abdomen} + y_{peito}/2, z_{peito}/2) \\
 M_{bracos} &= M_{tronco} \cdot T(0, 0, -z_{peito}/2 - z_{braco}/2) \\
 M_{braco\_esq} &= M_{bracos} \cdot T(\lambda, 0, 0) \cdot T(x_{tronco}/2 - x_{braco}/2, 0, 0) \\
 M_{cabeca} &= M_{tronco} \cdot R_z(\gamma) \cdot T(0, y_{peito}/2 + y_{cabeca}/2, z_{cabeca}/2 - z_{peito}/2)
 \end{aligned}$$

e para o Ovni

$$\begin{aligned}
 M_{corpo} &= T(0, h_{base} + h_{corpo}/2, 0) \\
 M_{lampadas} &= M_{corpo} \cdot T(0, h_{lampadas} - h_{base} - h_{corpo}/2, 0)
 \end{aligned}$$