

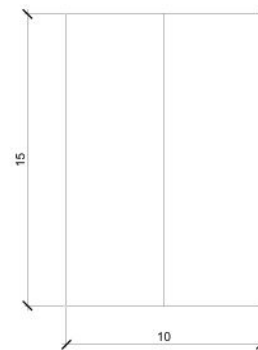
MODELAÇÃO E ESTRUTURAÇÃO DE SUPERFÍCIES DE ABÓBADAS

Modelação Geométrica e Generativa

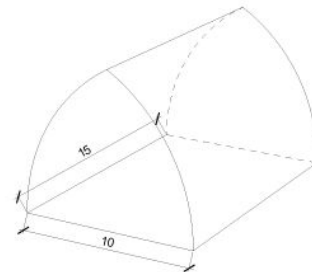
ABÓBADAS DE TRANSLAÇÃO - ABÓBADA OGIVAL

ABÓBADAS DE TRANSLAÇÃO - Abóbada Ogival

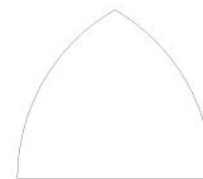
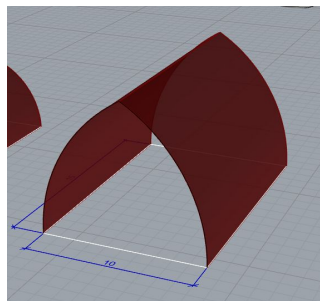
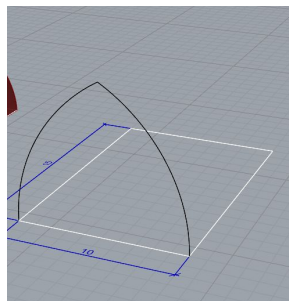
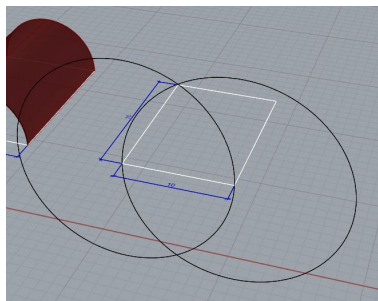
- Fazer um retângulo @10,15
- 2 circunferências verticais cada uma com centro num dos vértices da aresta de 10 no retângulo e raio no vértice oposto da mesma.
- “trim”, deixar só o arco
- “extrude”, selecionar o arco e arrastar até à aresta oposta do retângulo



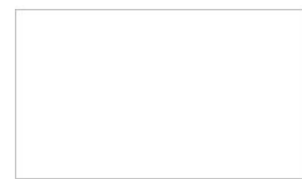
TOP VIEW



PERSPECTIVE VIEW



FRONT VIEW



RIGHT VIEW

Abóbada Original Segmented Barrel vault

The Grasshopper script is organized into three main colored regions: blue, green, and purple.

- Blue Region (Top):** Labeled "1st arc". It contains a "Pt" (Point) component connected to an "XZ" (Plane) component, which is then connected to an "Arc" (Curve) component.
- Green Region (Bottom):** Labeled "2nd arc". It contains a "2nd point" sub-region.
 - The "2nd point" sub-region (purple box) contains a "pDecon" (Decompose) component connected to a "Pt" (Point) component. It also contains an "A+B" (Add) component connected to a "Pt" (Point) component.
 - Outside the sub-region, a "Neg" (Negate) component is connected to the "Pt" component from the "2nd point" sub-region.
 - An "XZ" (Plane) component is connected to the "Neg" component.
- Purple Region (Right):** Labeled "extrude". It contains a "Factor" (Number) component set to 20.0, connected to an "Extr" (Extrude) component. The "Extr" component is also connected to a "Y" (Vector) component.

The script uses various components including "Pt" (Point), "XZ" (Plane), "Arc" (Curve), "pDecon" (Decompose), "A+B" (Add), "Neg" (Negate), "Factor" (Number), "Extr" (Extrude), and "Y" (Vector) to define the geometry of the segmented barrel vault.

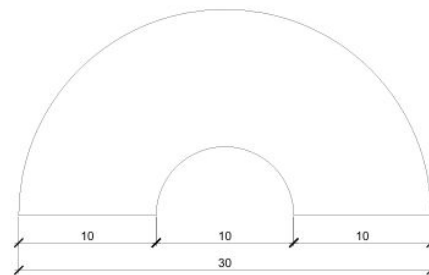


- “A” do “Arc”, “Set Domain” - “0 to $\pi / 3$ ”

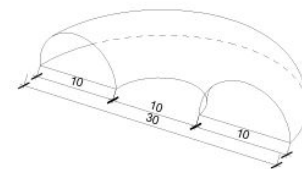
ABÓBADAS TÓRICAS DE REVOLUÇÃO - ABÓBADA TORAL

ABÓBADAS TÓRICAS DE REVOLUÇÃO - Abóbada Toral-----

- 2 circunferências com o mesmo centro, uma com 5 e outra com 15 de raio
- “line” com os seus diâmetros
- “trim” da parte de baixo das circunferências
- circunferência vertical num dos lados, “trim” na metade de baixo
- “sweep2” selecionar o semi-donuts menor, depois no maior, e por fim no arco



TOP VIEW



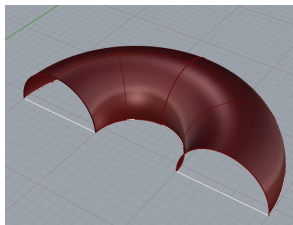
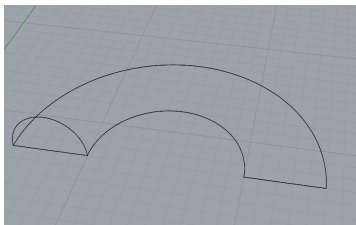
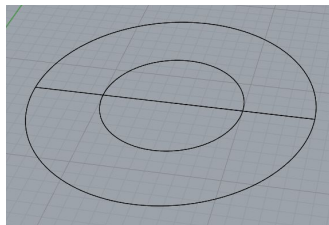
PERSPECTIVE VIEW



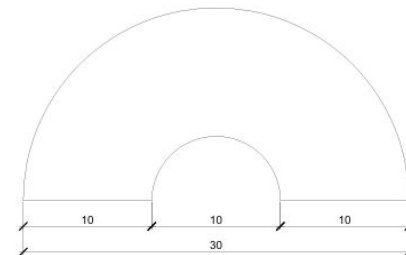
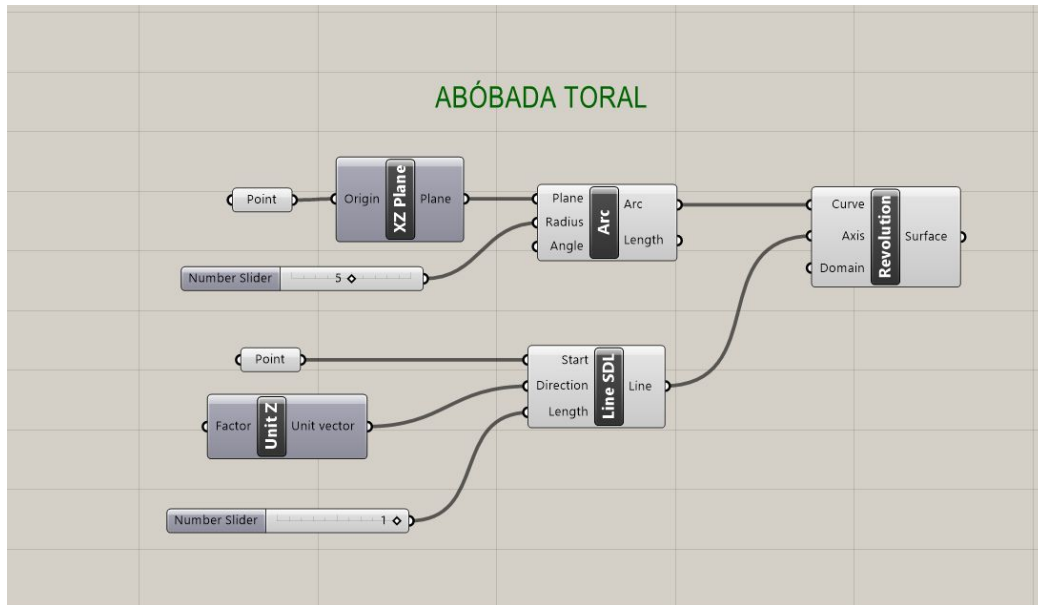
FRONT VIEW



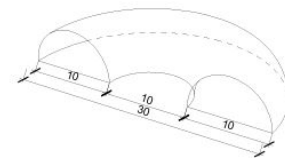
RIGHT VIEW



ABÓBADAS TÓRICAS DE REVOLUÇÃO - Abóbada Toral



TOP VIEW



PERSPETIVE VIEW



FRONT VIEW



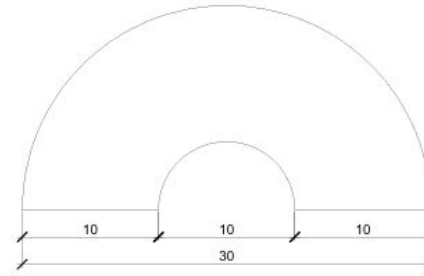
RIGHT VIEW

- “preview” no XZplane
- “revolution”, carregar no botão direito no “domain”, “set domain”, mudar par “ Pi to 0”

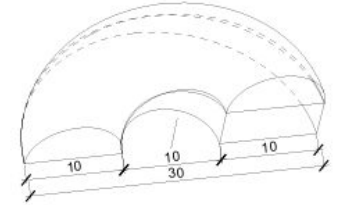
ABÓBADAS TÓRICAS DE REVOLUÇÃO - ABÓBADA HELICOIDAL

ABÓBADAS TÓRICAS DE REVOLUÇÃO - Abóbada Helicoidal

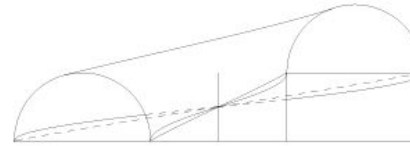
- 2 circunferências com o mesmo centro, uma com 5 e outra com 15 de raio
- “line” com os seus diâmetros
- “trim” da parte de baixo das circunferências
- no lado esquerdo do semi-donuts fazer uma circunferência vertical, e “trim” da sua metade de baixo
- no lado direito do semi-donuts marcar 2 linhas verticais com 5 de altura, e fazer uma circunferência vertical, com 2 pontos, nos pontos superiores dessas 2 linhas, trim da metade de baixo da circunferência



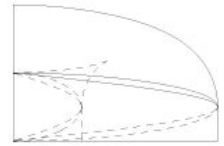
TOP VIEW



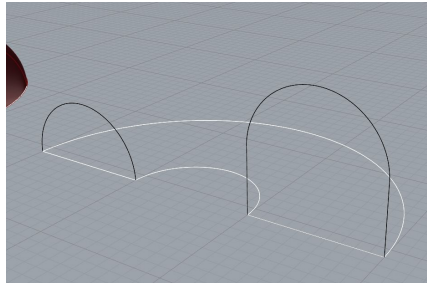
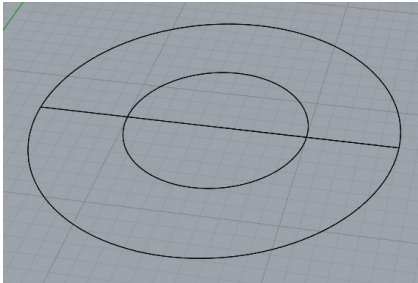
PERSPECTIVE VIEW



FRONT VIEW

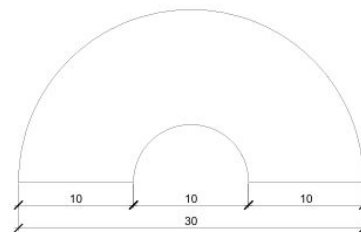


RIGHT VIEW

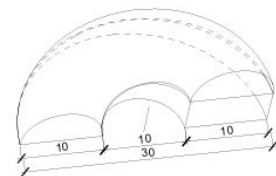


ABÓBADAS TÓRICAS DE REVOLUÇÃO - Abóbada Helicoidal

- fazer uma line que marque o diâmetro da segunda semi-circunferência
- “sweep2”, selecionar a circunferência menor da base, depois a maior, selecionar o primeiro semi arco e depois o segundo semi arco, enter
- fazer uma line vertical no centro das 2 circunferências iniciais, com 5 de altura
- “loft”, para preencher as paredes, selecionar a base do “donuts” menor e a linha do sweep2 menor, fazer o mesmo para a metade do “donuts” maior
- “helix”, selecionar a linha vertical central, “turns=0.5, mode=pitch” (fazer o mesmo no semi-donuts maior e pequeno sweep2 da helix



TOP VIEW



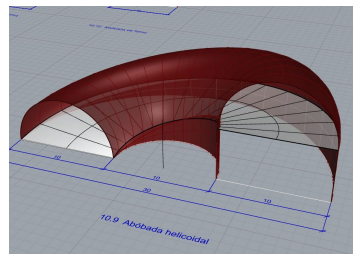
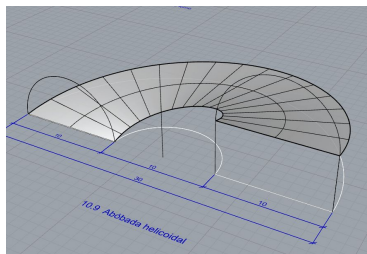
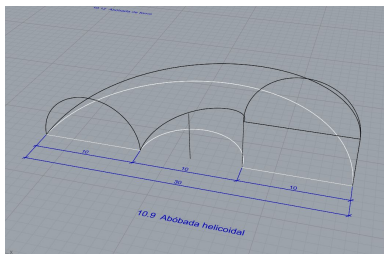
PERSPETIVE VIEW



FRONT VIEW



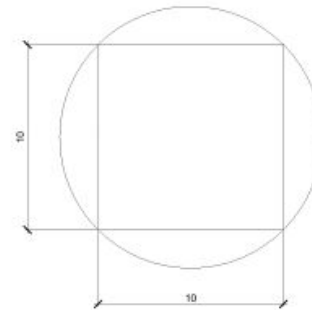
RIGHT VIEW



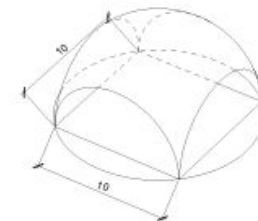
ABÓBADAS ESFÉRICAS - ABÓBADA DE VELA

ABÓBADAS ESFÉRICAS - Abóbada de Vela

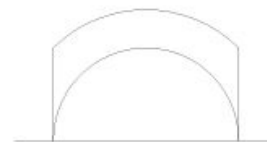
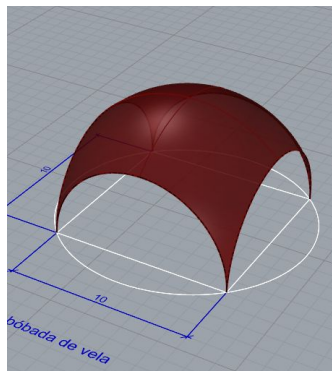
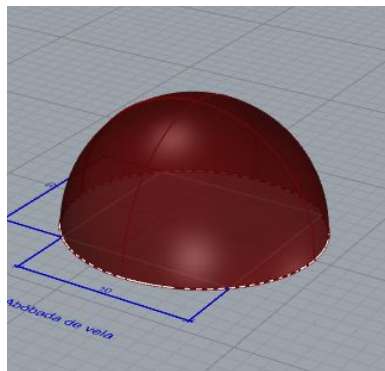
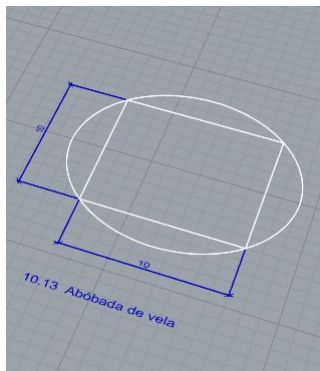
- quadrado com @10,10
- circunferência com centro no centro do quadrado e raio até um dos vértices do mesmo
- fazer a esfera, “trim” da parte de baixo
- selecionar o quadrado, “project”, selecionar a esfera, enter
- “trim” dos arcos resultantes



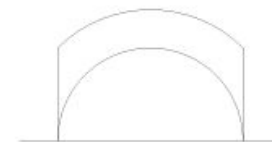
TOP VIEW



PERSPETIVE VIEW



FRONT VIEW

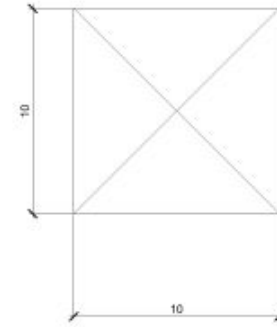


RIGHT VIEW

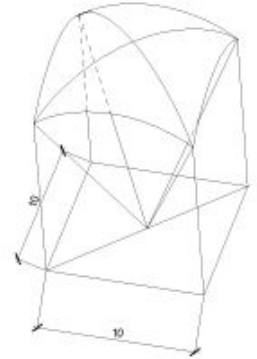
ABÓBADAS ESFÉRICAS - ABÓBADA CATALÀ

ABÓBADAS ESFÉRICAS - Abóbada Catalã

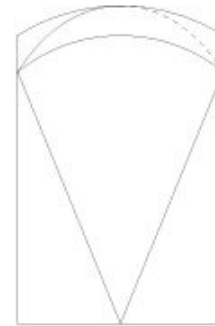
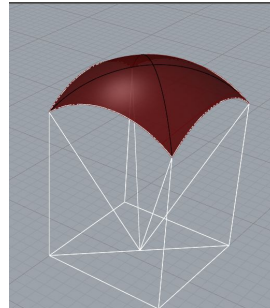
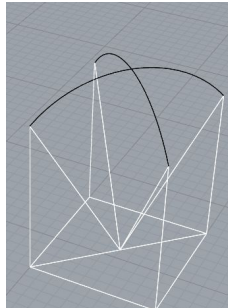
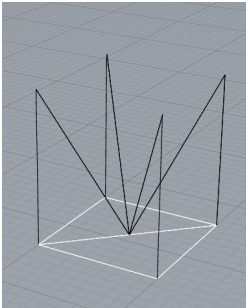
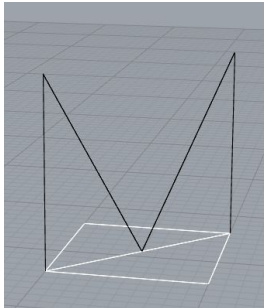
- quadrado com @10,10, e fazer a sua diagonal
- a partir do midpoint fazer uma line @12<45<60, fazer "mirror"
- fazer linhas verticais que unem duas dos vértices do quadrado as linhas feitas anteriormente
- "mirror" da estrutura
- 2 circunferência vertical nas diagonais da estrutura, "trim" das partes de baixo
- fazer uma esfera que passe por esses arcos
- selecionar o quadrado, "project", selecionar a esfera, "trim"



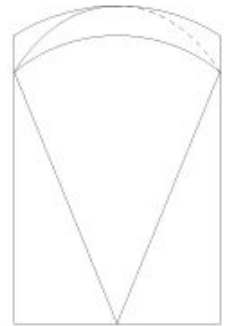
TOP VIEW



PERSPECTIVE VIEW



FRONT VIEW

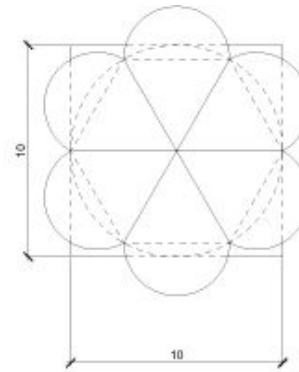


RIGHT VIEW

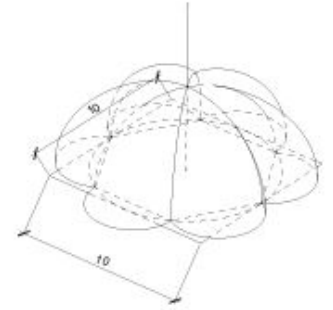
ABÓBADAS ALVEOLARES - ABÓBADA ALVEOLADA

ABÓBADAS ALVEOLARES - Abóbada Alveolada

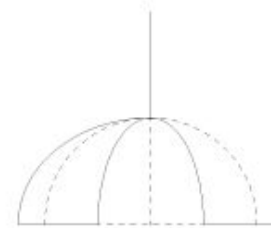
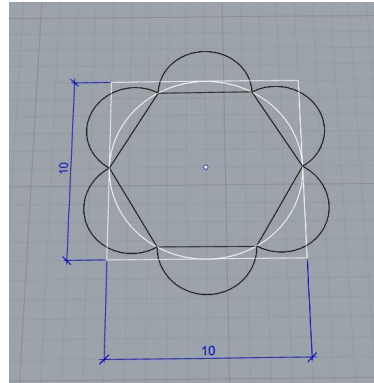
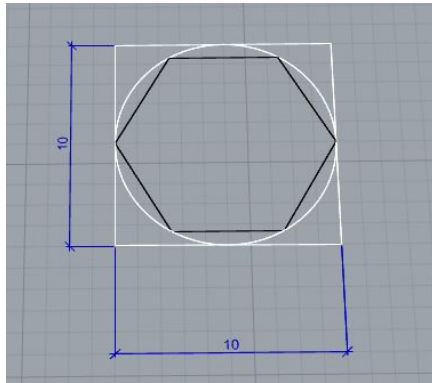
- quadrado com @10,10
- circunferência com centro no centro do quadrado e raio até á aresta do quadrado
- "polygon", 6 lados, centro no centro da circunferência até ao seu raio
- "arc" numa das arestas do polígono hexagonal, com centro no seu midpoint e seleccionar os dois vértices mais próximos
- "arraypolar", seleccionar o arco, centro do polígono, 6 copiar, 360°, agrupar os 6 arcos



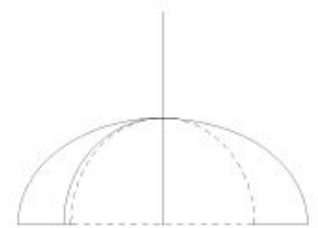
TOP VIEW



PERSPECTIVE VIEW



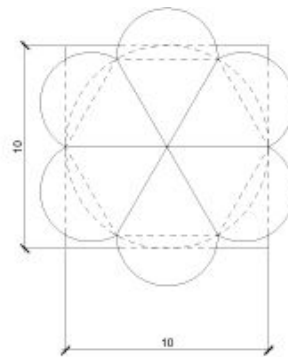
FRONT VIEW



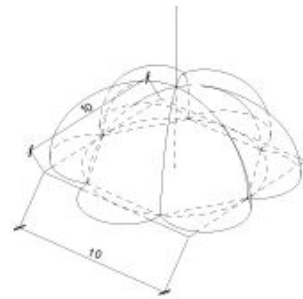
RIGHT VIEW

ABÓBADAS ALVEOLARES - Abóbada Alveolada

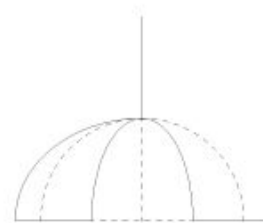
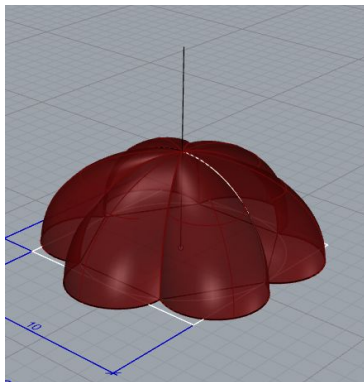
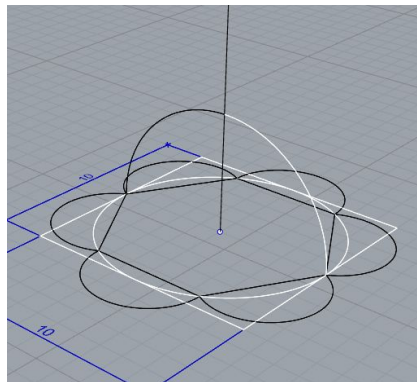
- “line” vertical com 10 de altura no centro
- circunferência vertical, com 2 pontos, com diâmetro do polígono, “trim” da parte de baixo
- “split”, selecionar o arco e linha vertical com 10 de altura, o arco vai ficar dividido a partir da interseção na linha vertical
- “railrevolve”, selecionar a parte esquerda do arco cortado, selecionar os 6 arcos, com eixo na linha vertical (ponto de baixo e depois ponto de cima)



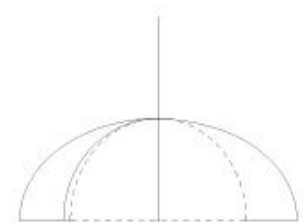
TOP VIEW



PERSPECTIVE VIEW



FRONT VIEW



RIGHT VIEW