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# Triangulation

## Monotone Decomposition

## - Possible Cases

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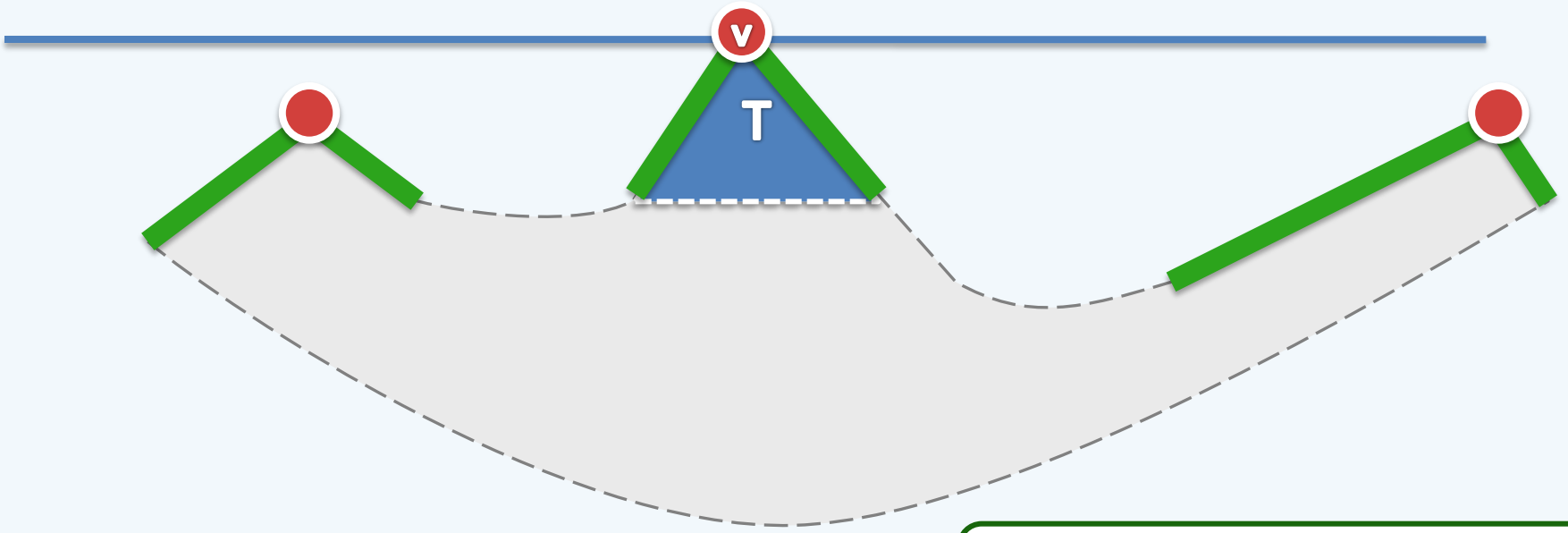
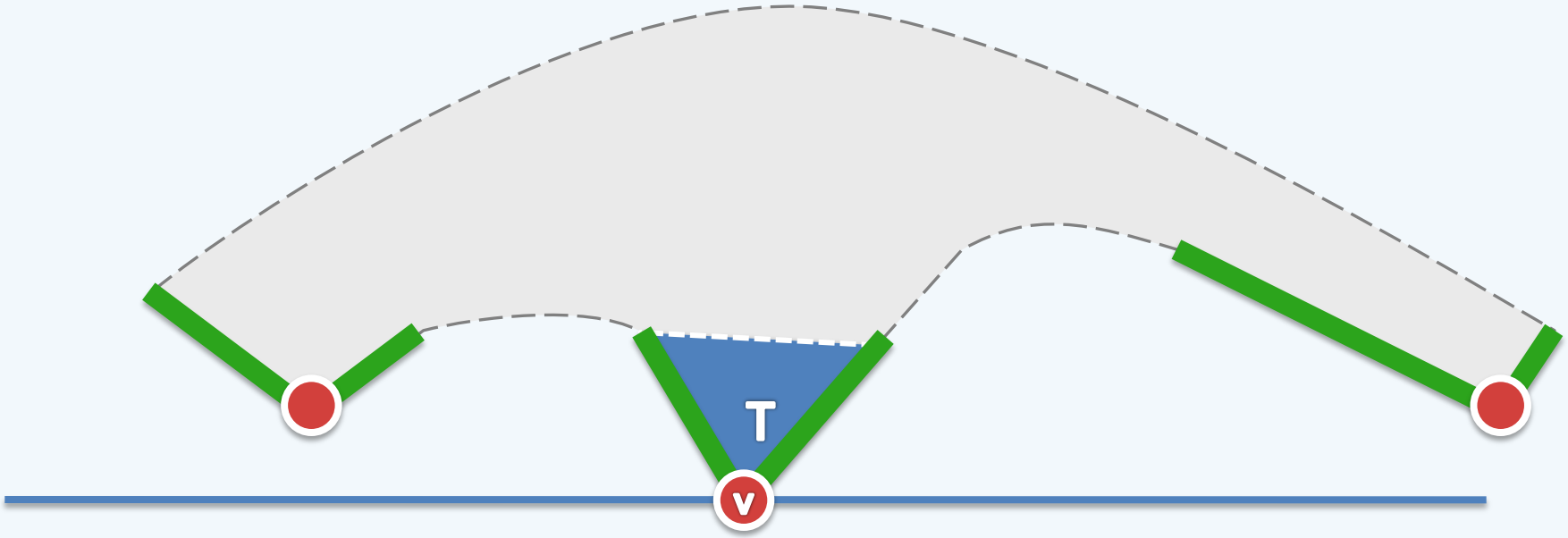
# 1: Start Vertex

- A start vertex (event) - has 2 edges incident from below and
  - defines a convex internal angle
- At a start vertex v, - insert a new trapezoid T to $S$
  - let helper(T) = v



# 2: End Vertex

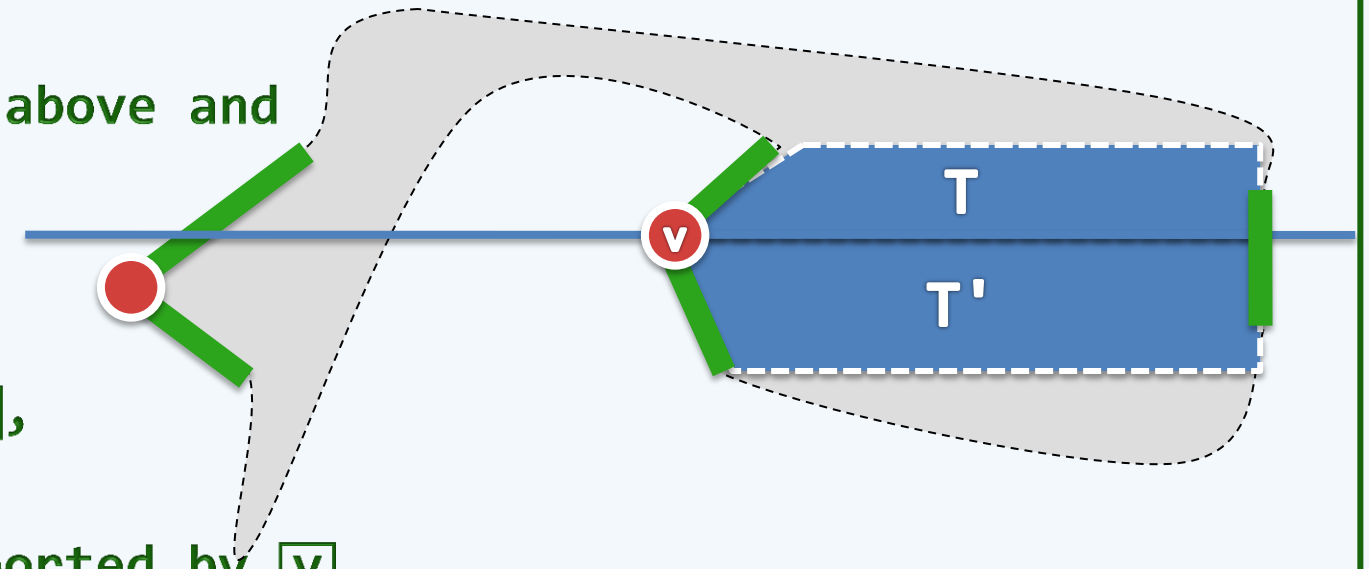
- An end vertex (event) - has 2 edges incident from above and
  - defines a convex internal angle
- At an end vertex v, - find the trapezoid T supported by v
  - remove T from $S$



# 3: Left Adjacency

❖ A left adjacency vertex (event) has

- a left edge incident from above and
- another one from below



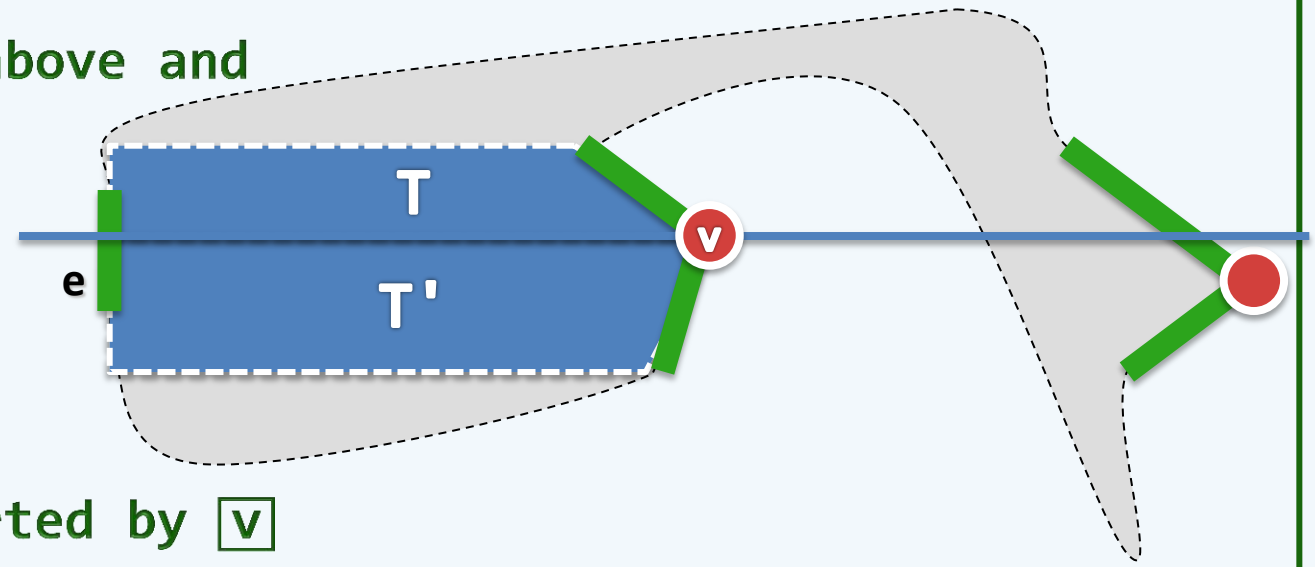

❖ At a left adjacency vertex v,

- find the trapezoid T supported by v
- replace T with T′ in $S$
- let helper(T') = v

# 4: Right Adjacency

❖ A right adjacency vertex (event) has

- a right edge incident from above and
- another one from below



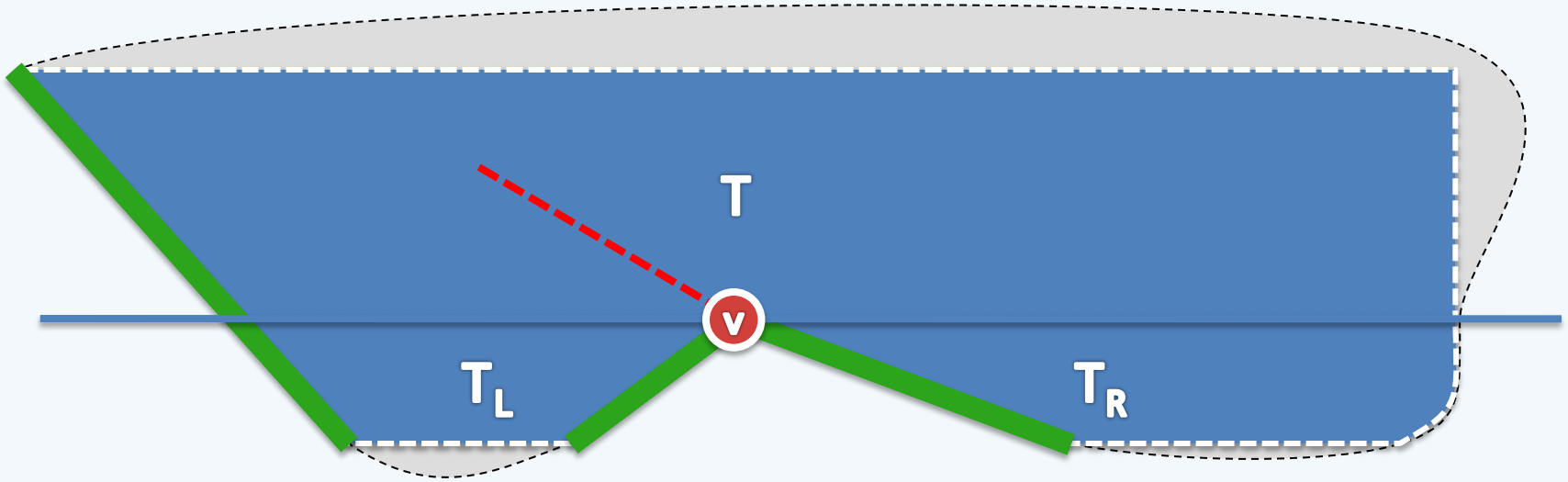

❖ At a right adjacency vertex v,

- find the trapezoid T supported by v
- replace T with T' in $\mathcal{S}$
- let helper(T') = v

# 5: Stalagmite

❖ At a stalagmite vertex $v$

- find the trapezoid $T$ supported by $v$
- split $T$ into $T_L$ and $T_R$
- let helper($T_L$) = helper($T_R$) = $v$



# 6: Stalactite

❖ At a stalactite vertex $v$

- find the trapezoids $T_L$ and $T_R$ supported by $v$
- merge $T_L$ and $T_R$ into $T$
- let helper(T) = $v$