RANDOM_CONFIG($q_{goal}$)

**if** $rand(0,1) < \beta$ **then**
  **return** $q_{goal}$
**else**
  **return** random sample from $C_{free}$
**end if**

EXTEND($\mathcal{T}, q$)

$q_{near} \leftarrow$ NEAREST_NEIGHBOR($\mathcal{T}, q$)
**if** $|q_{near} - q| < \epsilon$ **then**
  $q_{new} \leftarrow q$
**else**
  $q_{new} \leftarrow q_{near} + \frac{\epsilon}{|q - q_{near}|}(q - q_{near})$
**end if**
**if** $q_{new} \in C_{free}$ **and** $(q_{near}, q_{new}) \in C_{free}$ **then**
  $\mathcal{T}$.add_vertex($q_{new}$)
  $\mathcal{T}$.add_edge($(q_{near}, q_{new})$)
  **if** $q_{new} = q$ **then**
    **return** *Reached*
  **else**
    **return** *Advanced*
  **end if**
**else**
  **return** *Trapped*
**end if**

CONNECT($\mathcal{T}, q$)

**repeat**
  $S \leftarrow$ EXTEND($\mathcal{T}, q$)
**until** $S \neq$ *Advanced*
**return** $S$

RRT_CONNECT($q_{start}, q_{goal}$)

$\mathcal{T}_a$.init($q_{start}$), $\mathcal{T}_b$.init($q_{goal}$)
**for** $k = 1$ **to** K **do**
  $q_{rand} \leftarrow$ RANDOM_CONFIG($q_{goal}$)
  **if** EXTEND($\mathcal{T}_a, q_{rand}$)$\neq$ *Trapped* **then**
    **if** CONNECT($\mathcal{T}_b, q_{new}$)$=$ *Reached* **then**
      **return** PATH($\mathcal{T}_a, \mathcal{T}_b$)
    **end if**
  **end if**
  SWAP($q_{start}, q_{goal}$), SWAP($\mathcal{T}_a, \mathcal{T}_b$)
**end for**
**return** *Failure*