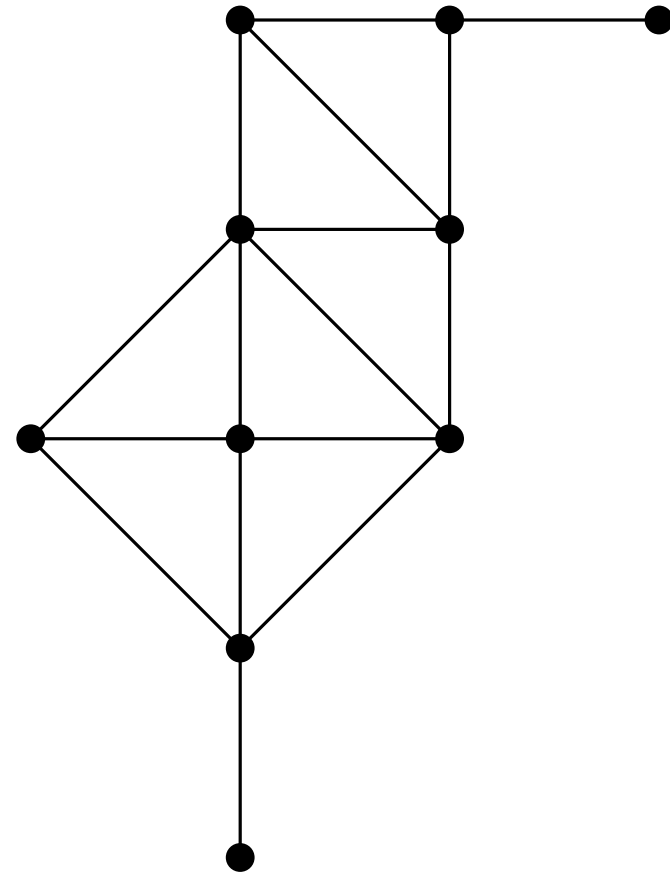

Input : undirected graph $G = (V, E)$.

Output : vertex ordering σ .

```
1  assign each vertex label  $\emptyset$ ;
2  for  $i \leftarrow n$  to 1 do
3      choose a vertex  $v$ 
          with no assigned number in  $\sigma$ 
          with lexicographically largest label;
4       $\sigma(i) \leftarrow v$ ;
5      for every vertex  $w \in \text{Adj}(v)$ 
          with no assign number in  $\sigma$ 
6          append  $i$  to  $\text{label}(w)$ ;
7      end for
8  end for
```

Algorithm 1 : LexBFS

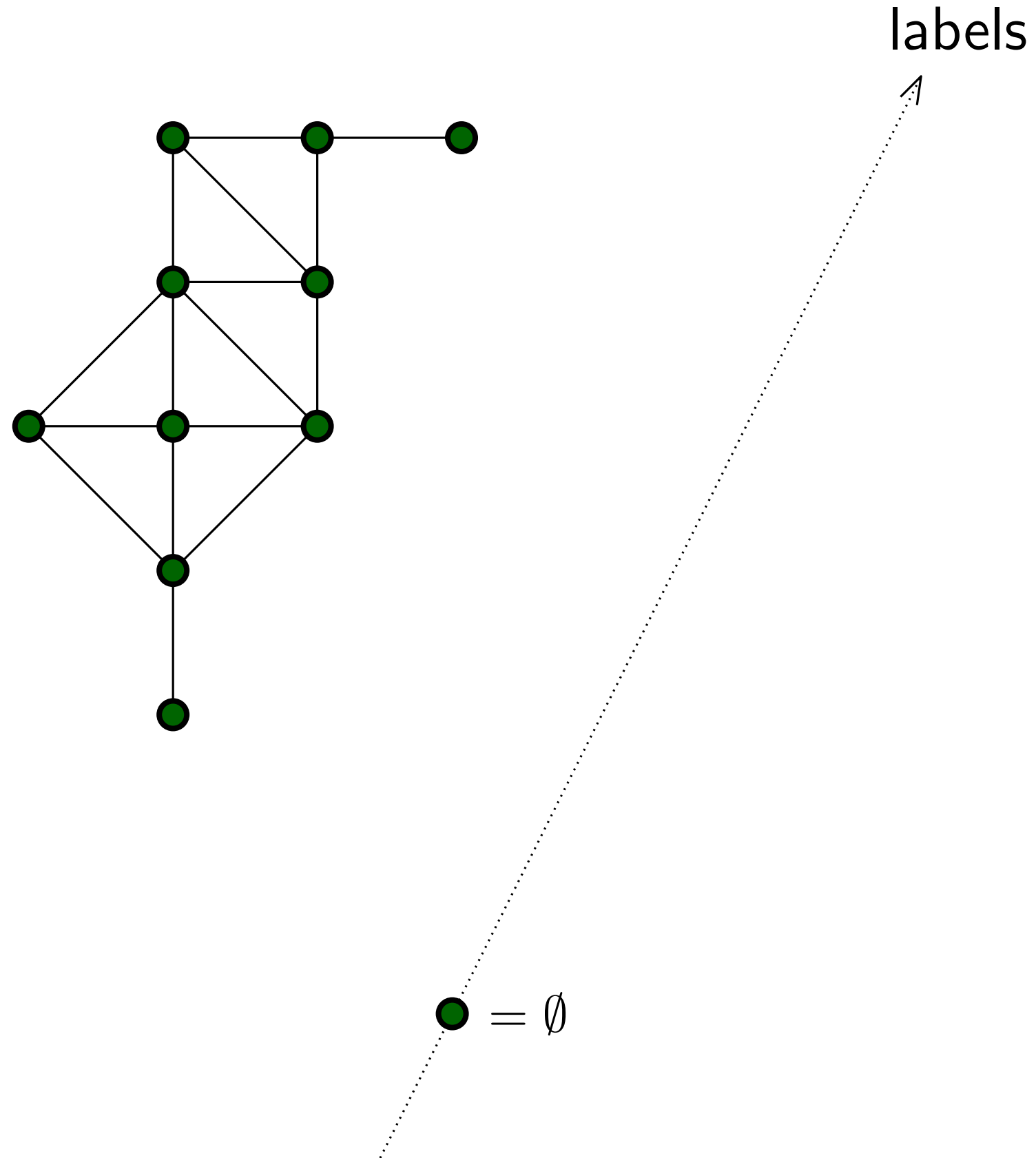


Algorithm **LexBFS**

```

for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
    |  $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for

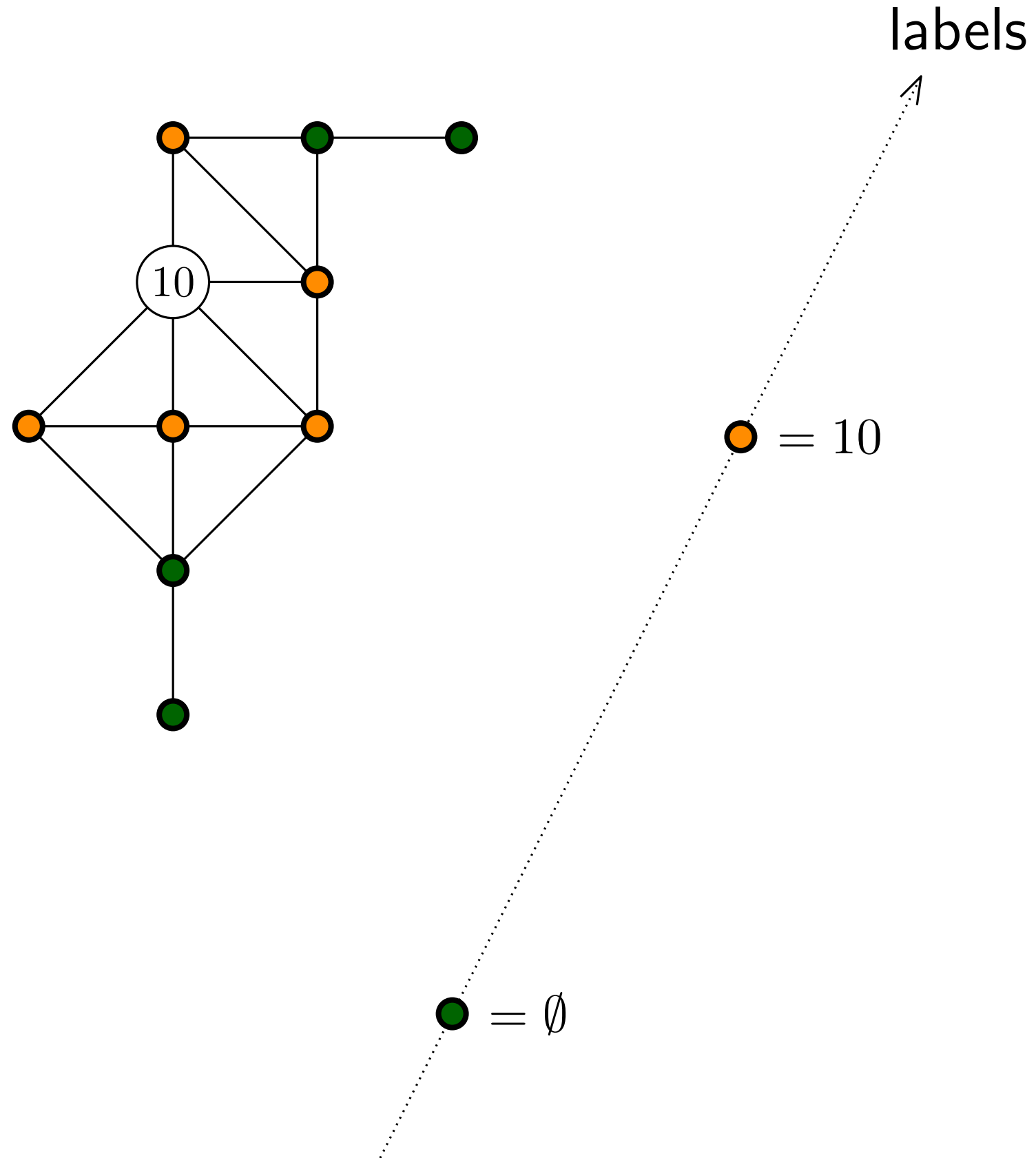
```



Algorithm **LexBFS**

```

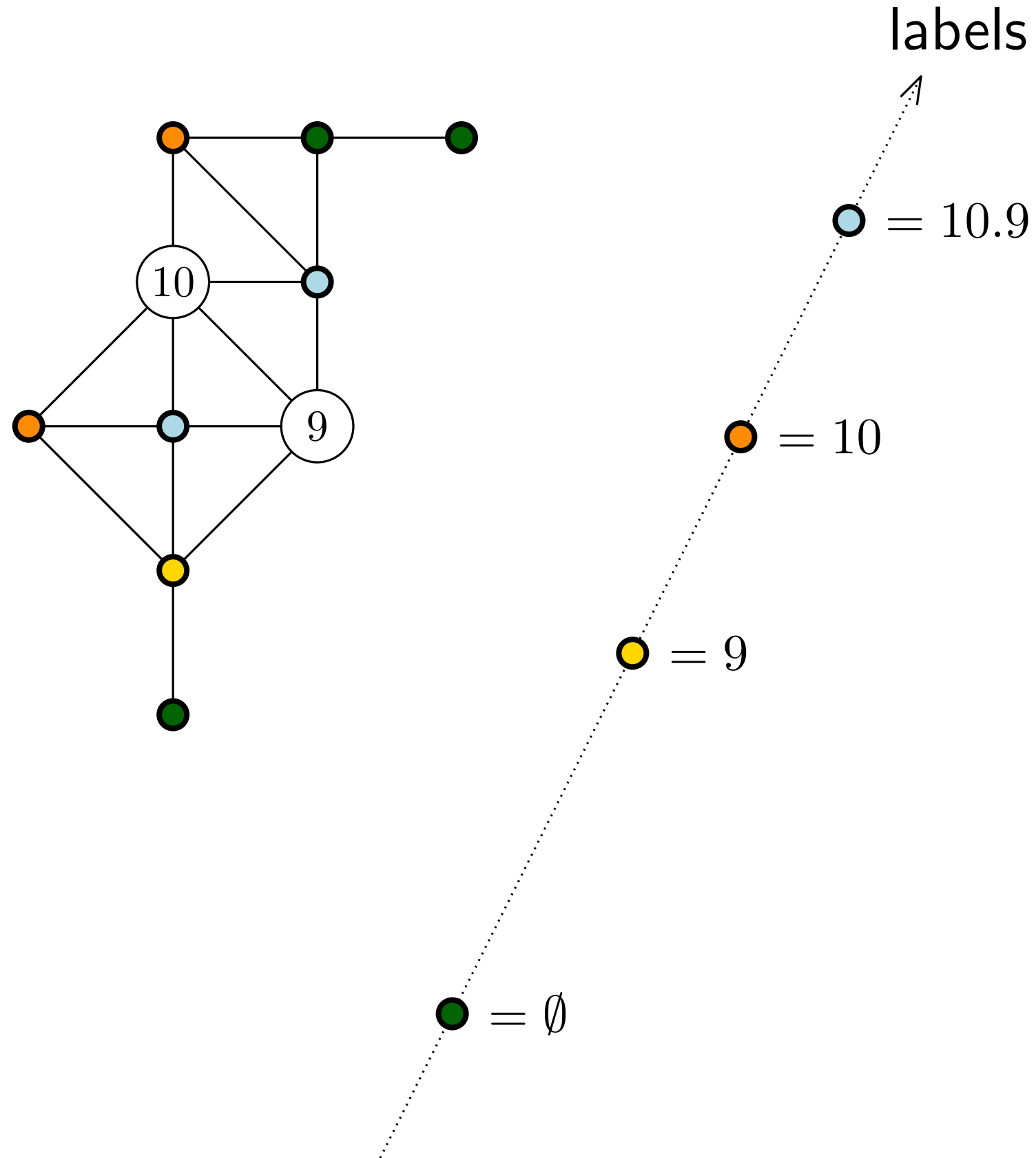
for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
     $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for
  
```



Algorithm **LexBFS**

```

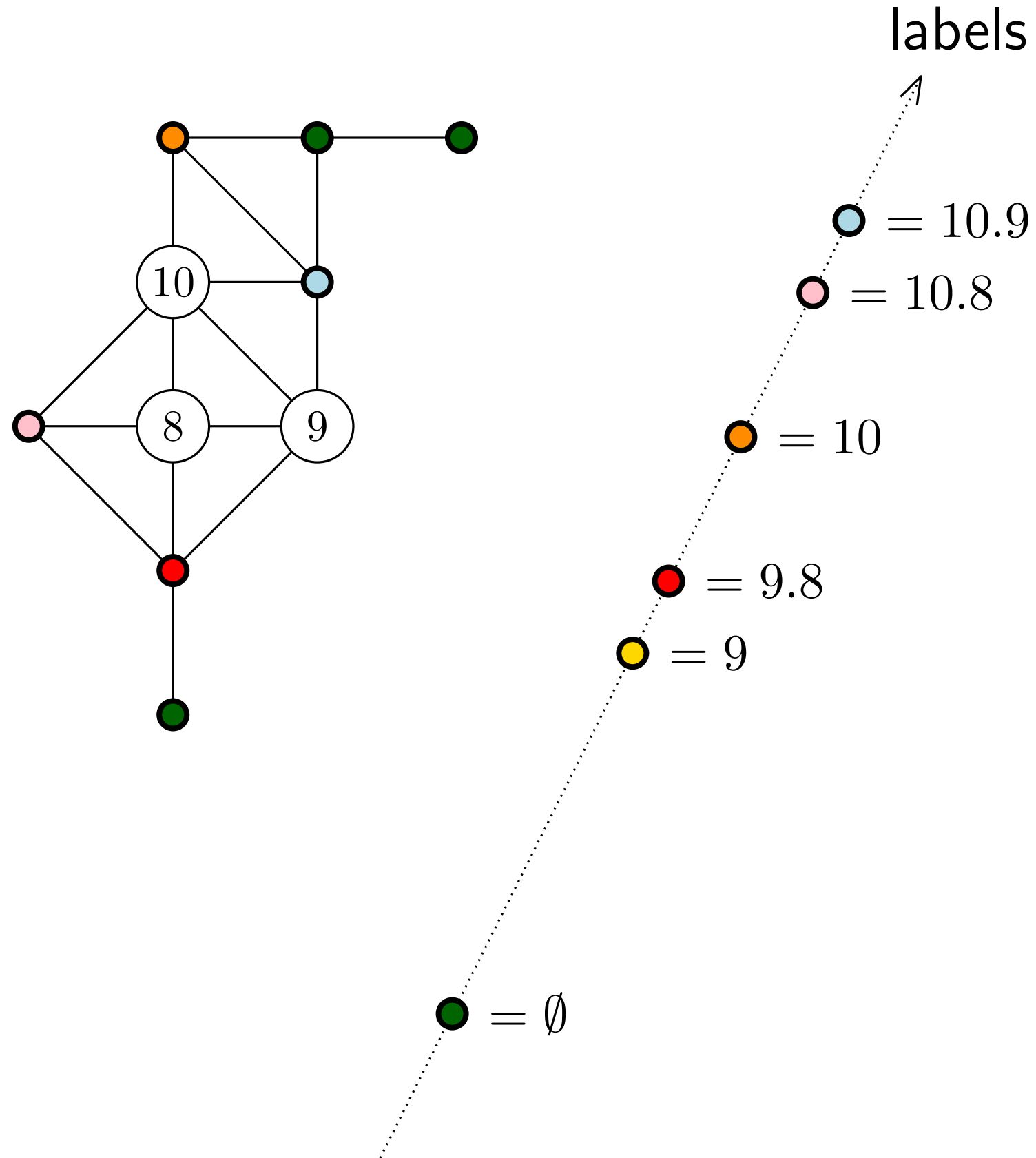
for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
     $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for
  
```



Algorithm **LexBFS**

```

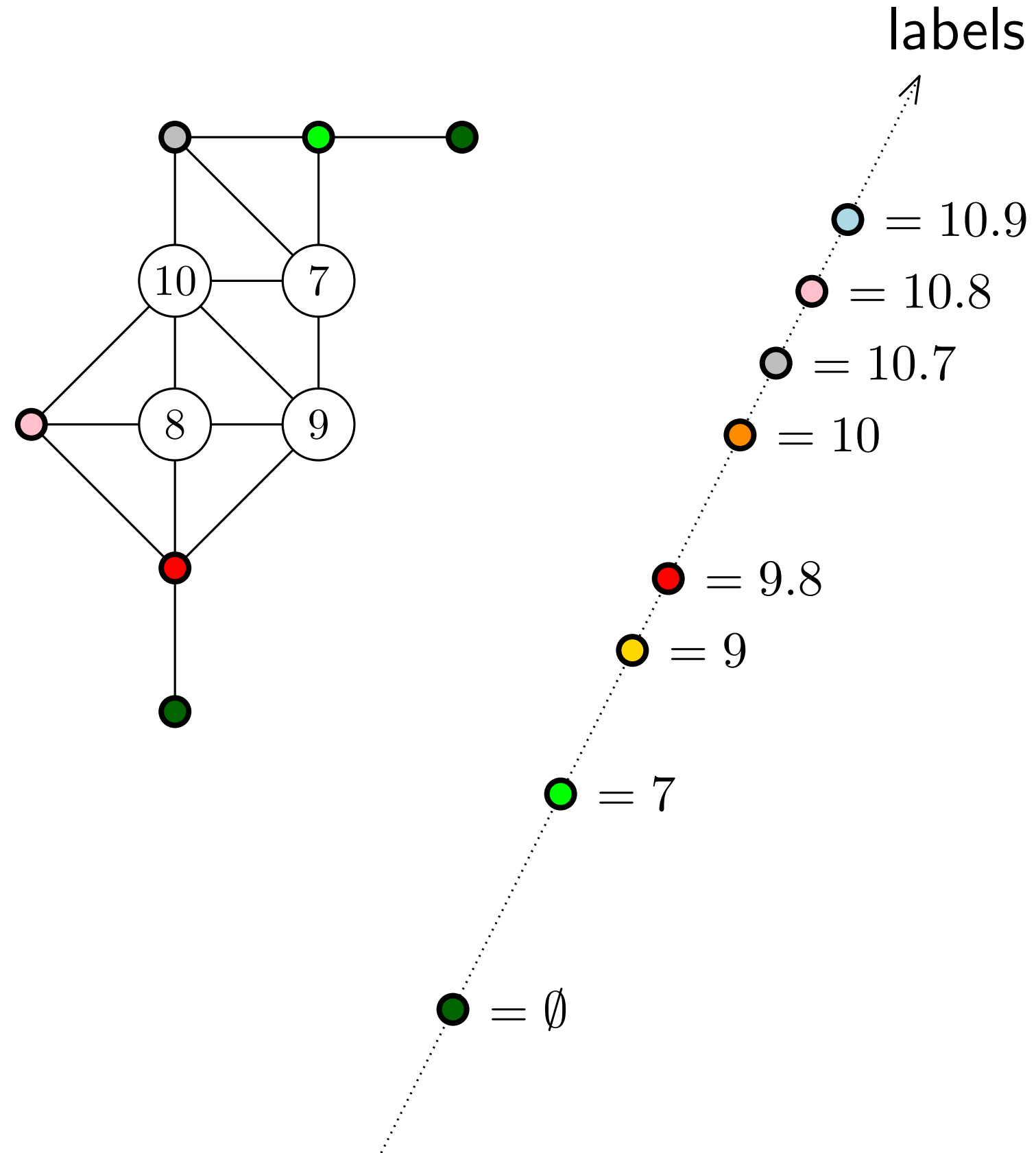
for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
     $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for
  
```



Algorithm **LexBFS**

```

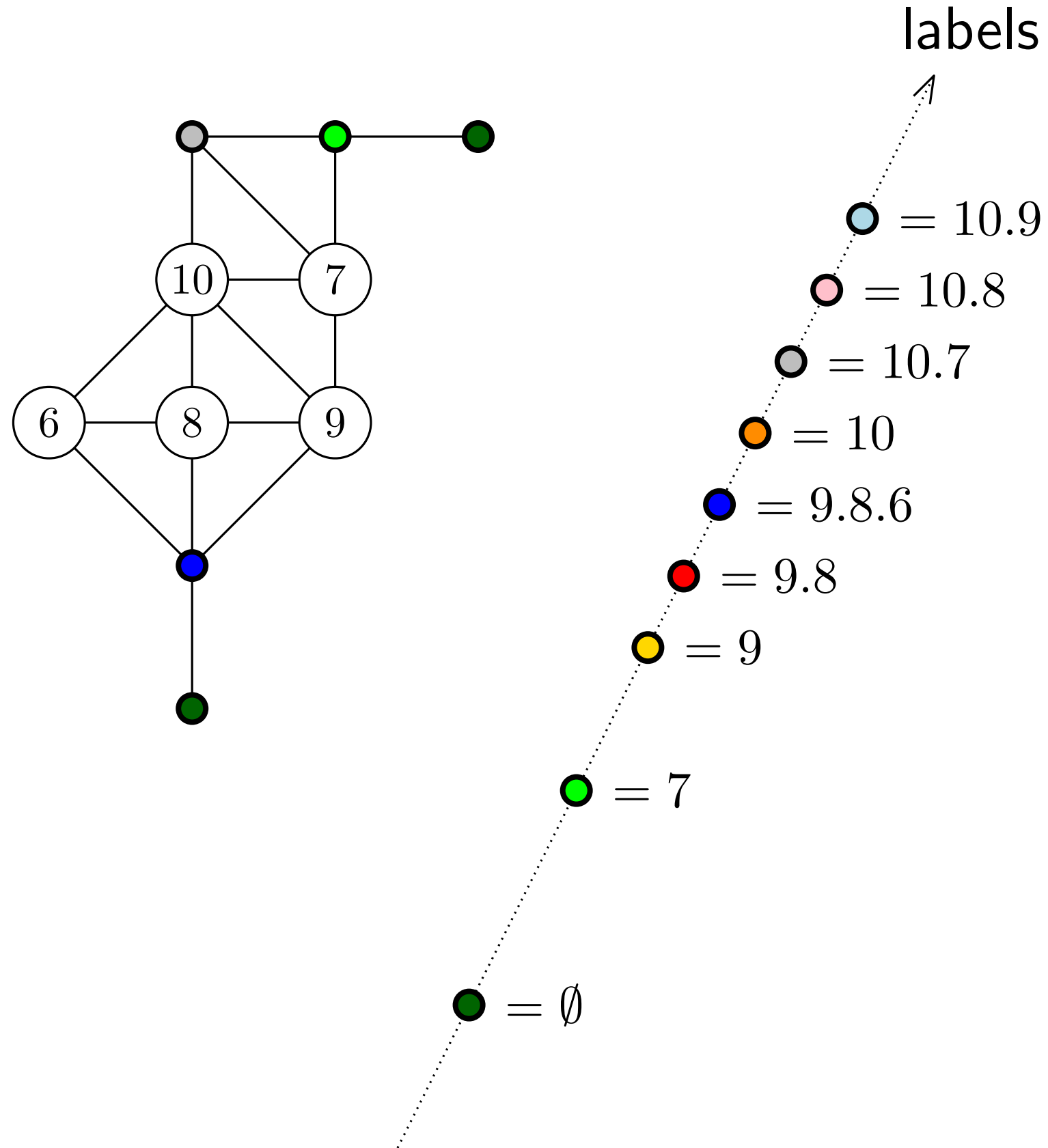
for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
     $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for
  
```



Algorithm **LexBFS**

```

for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
     $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for
  
```

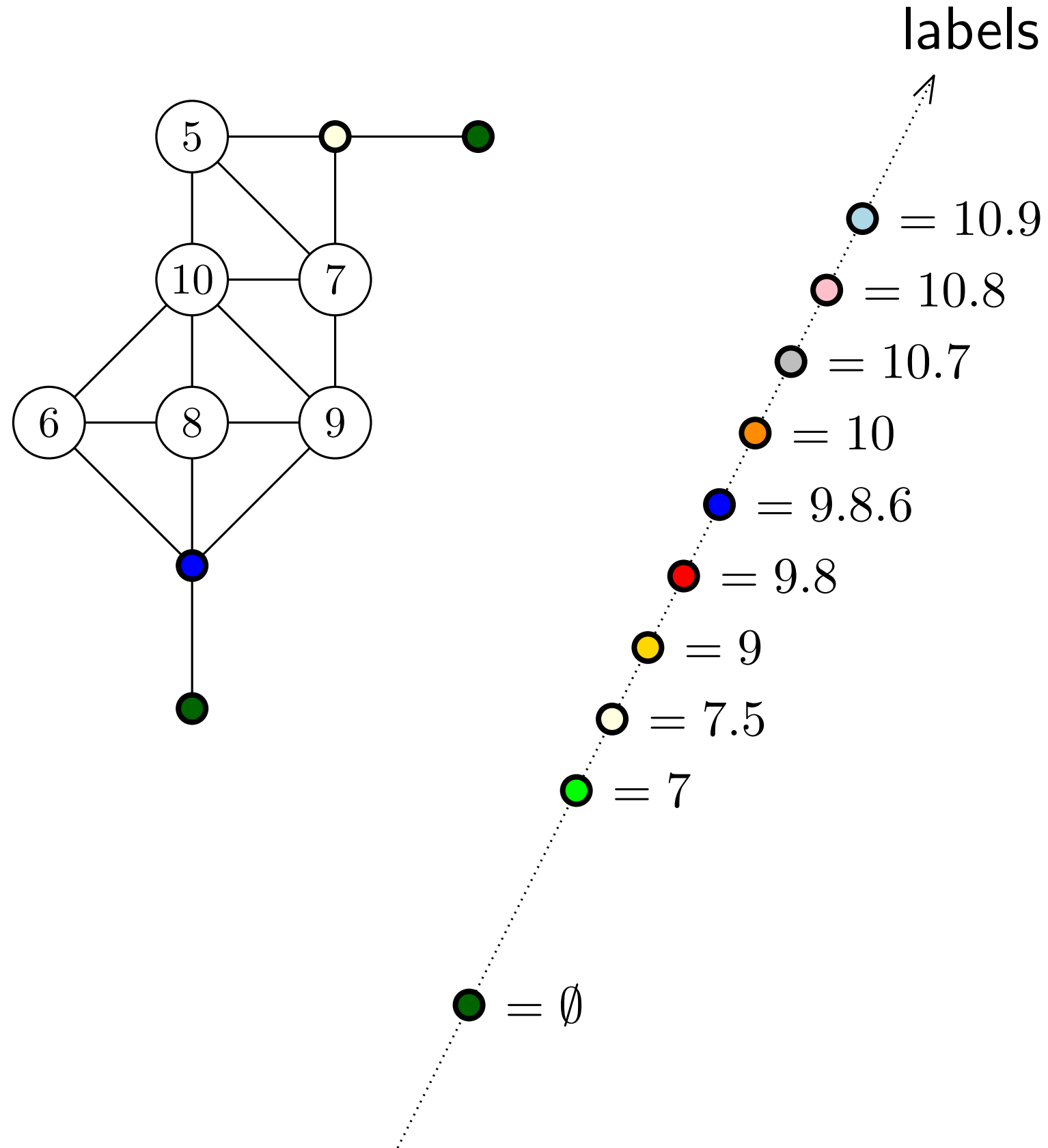


Algorithm **LexBFS**

```

for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
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  end for
end for

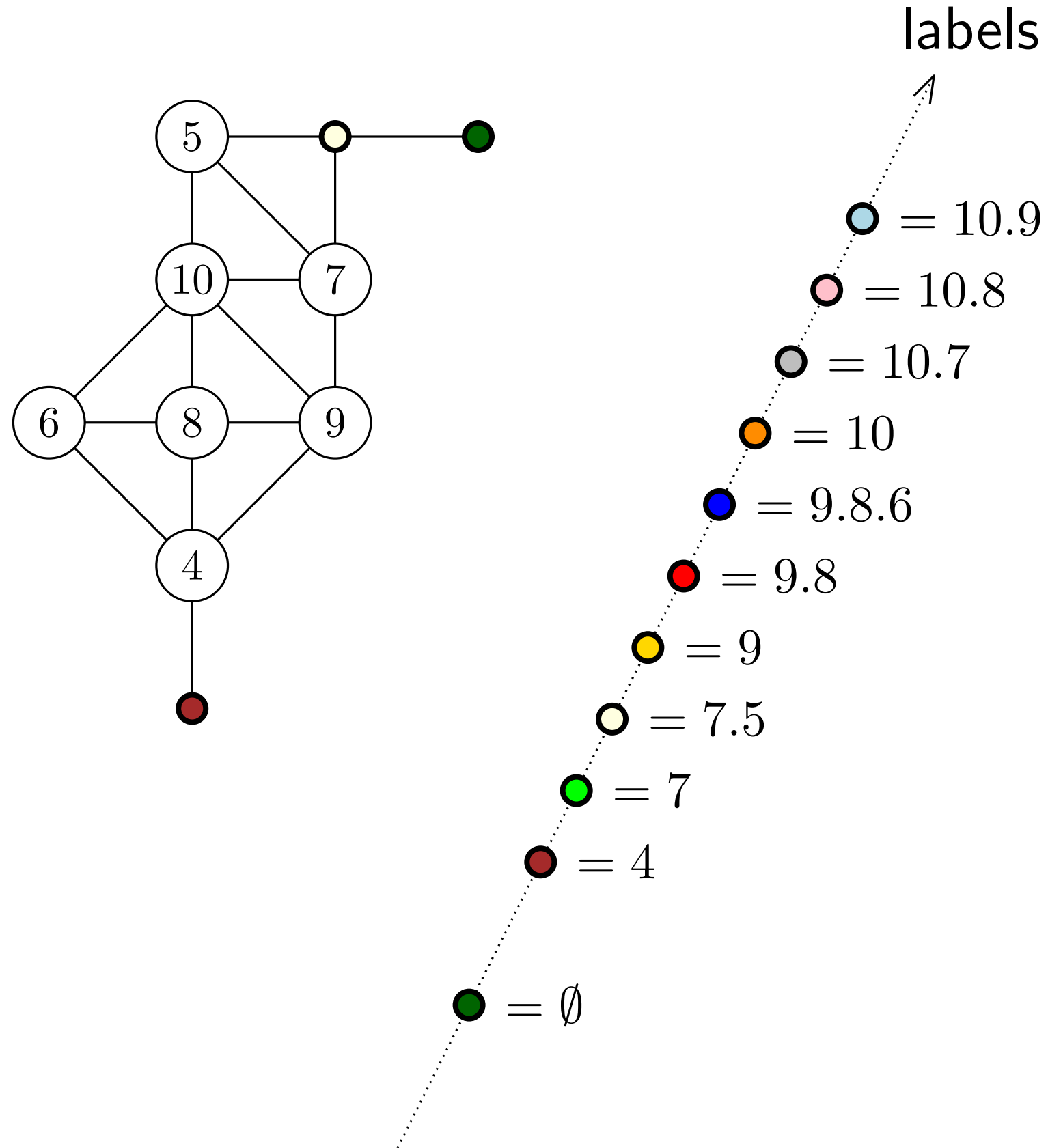
```



Algorithm **LexBFS**

```

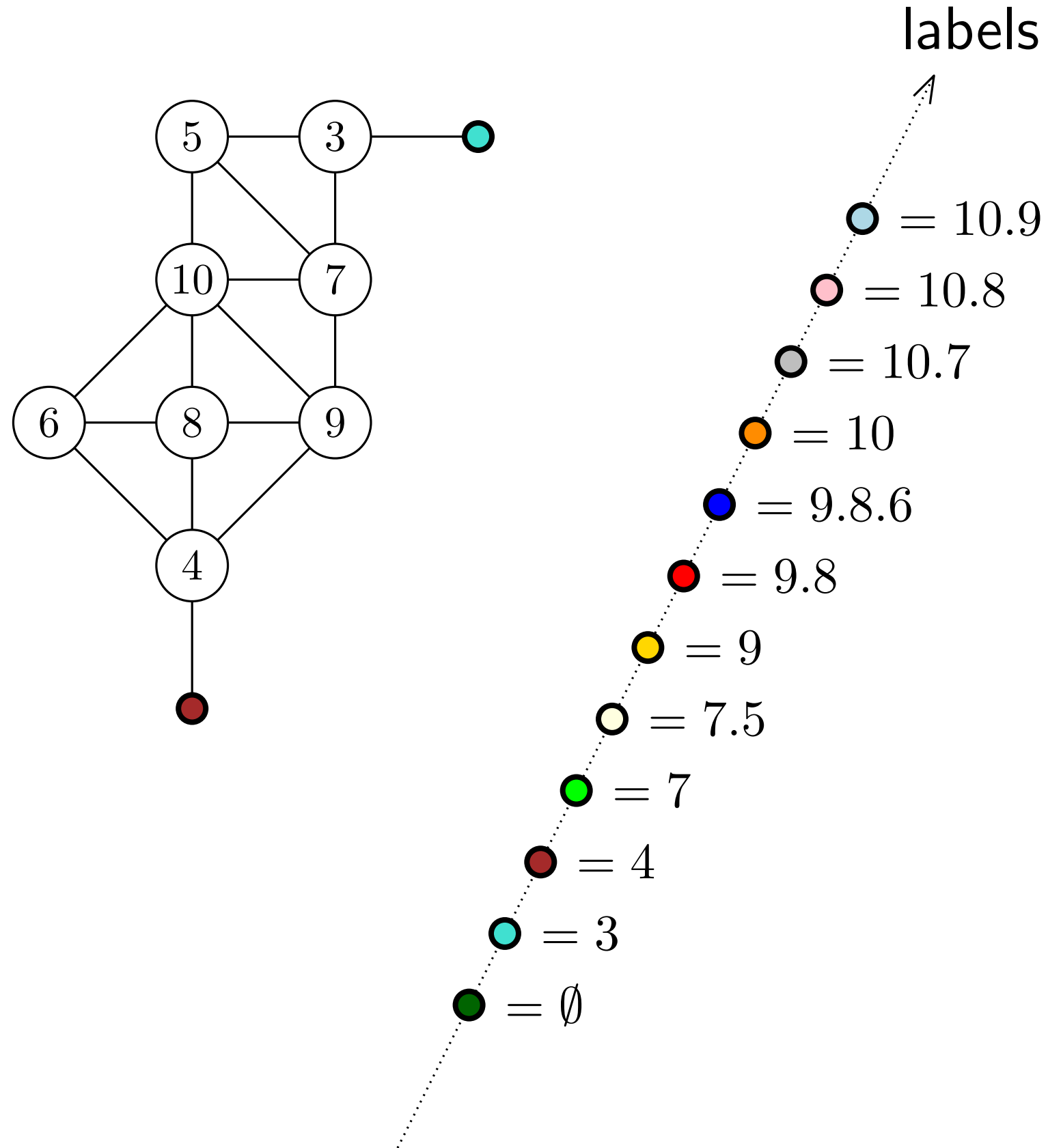
for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
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Algorithm **LexBFS**

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    |  $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for
  
```

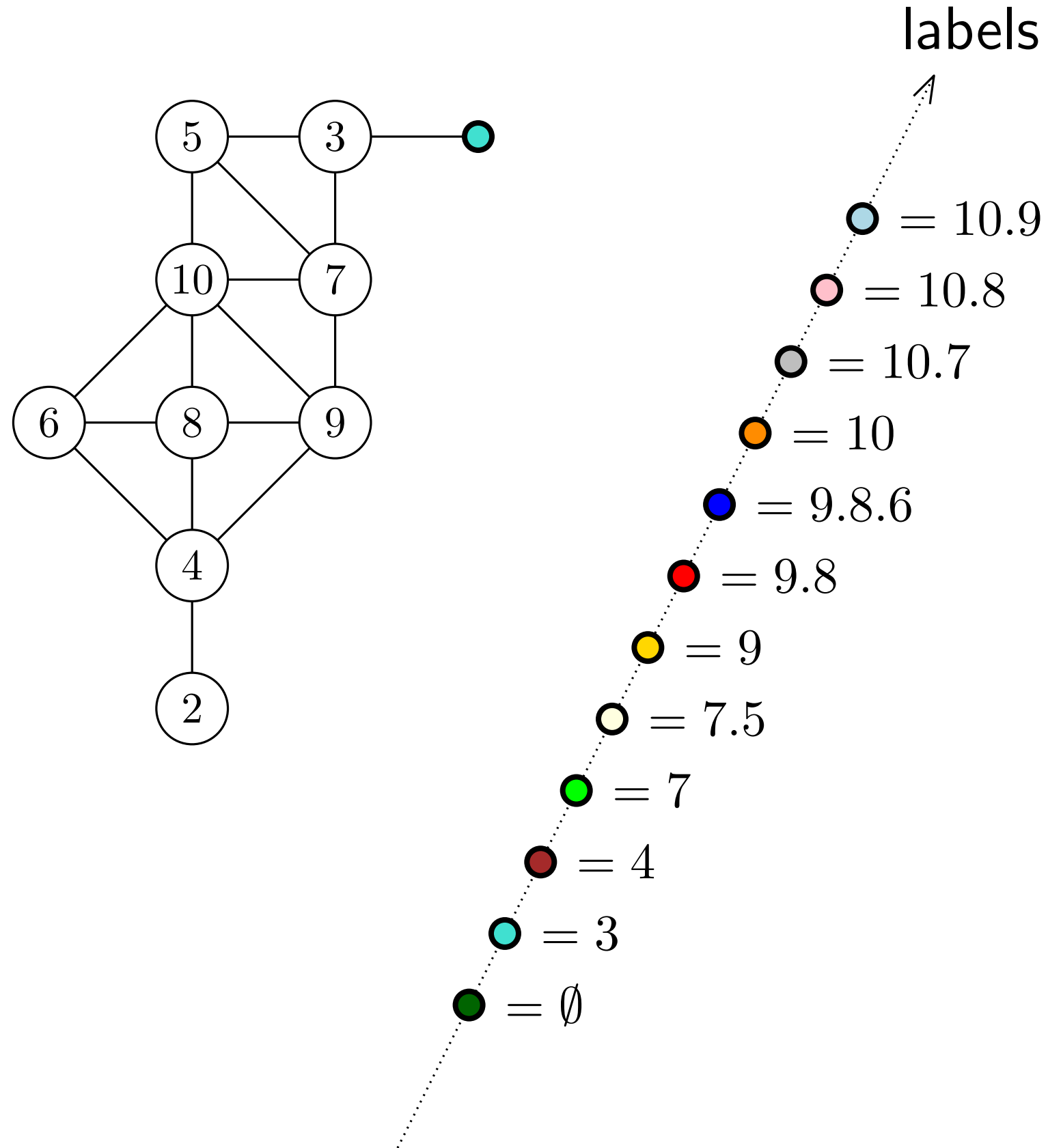


Algorithm **LexBFS**

```

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   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
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  end for
end for

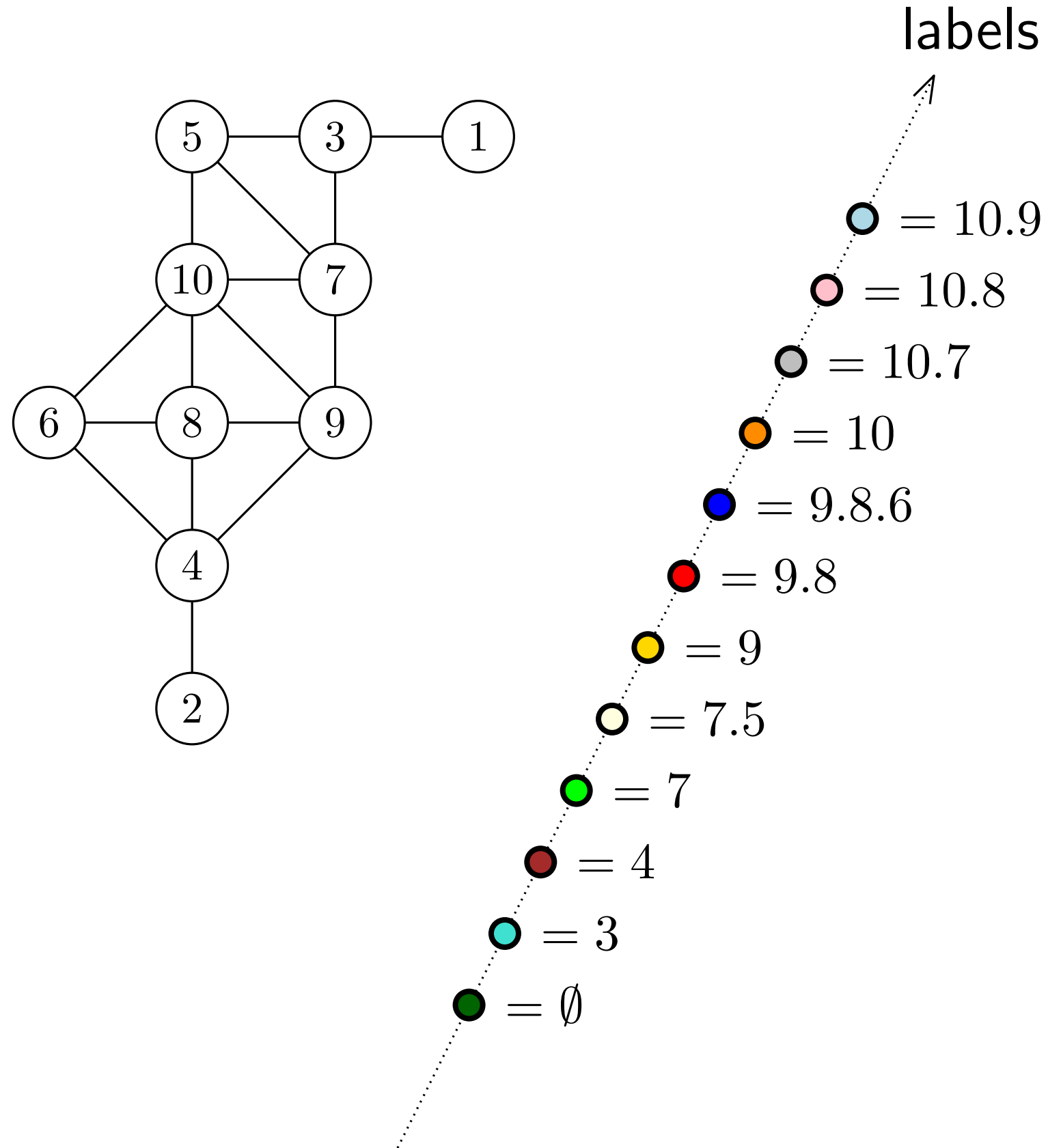
```



Algorithm **LexBFS**

```

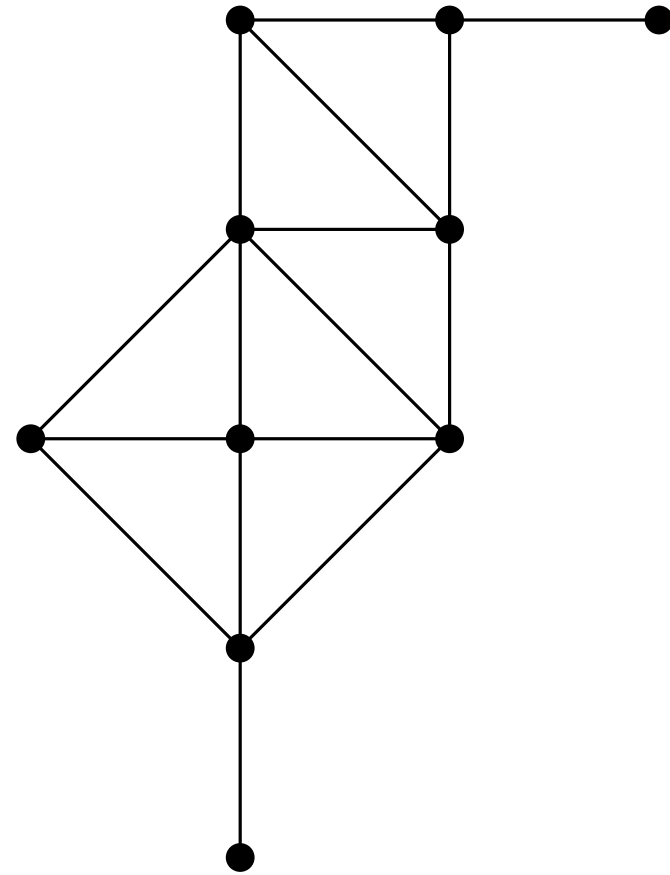
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Algorithm **LexBFS**

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  for  $w \in \text{Adj}(v)$  do
    |  $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for
  
```

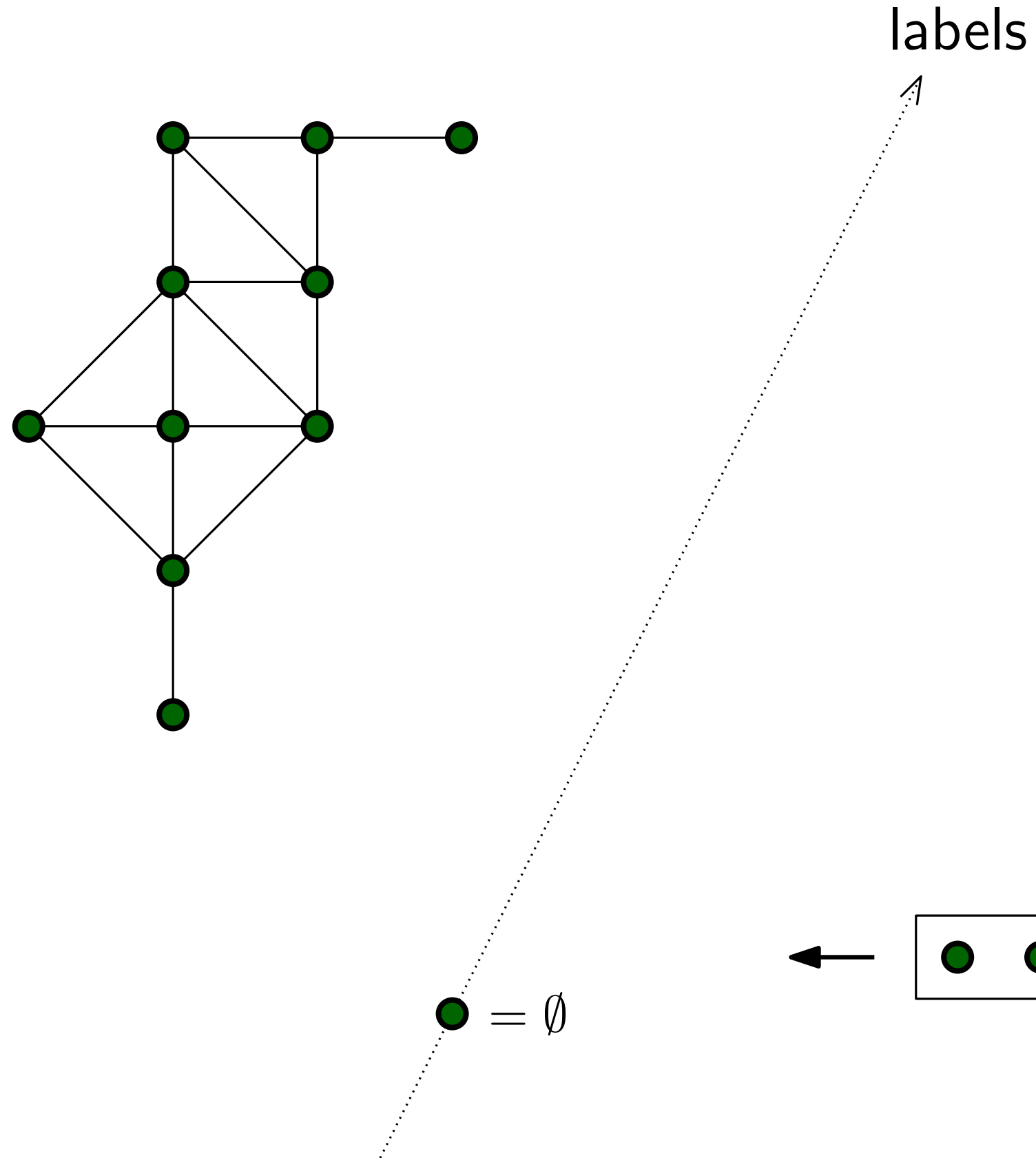


Algorithm **LexBFS**

```

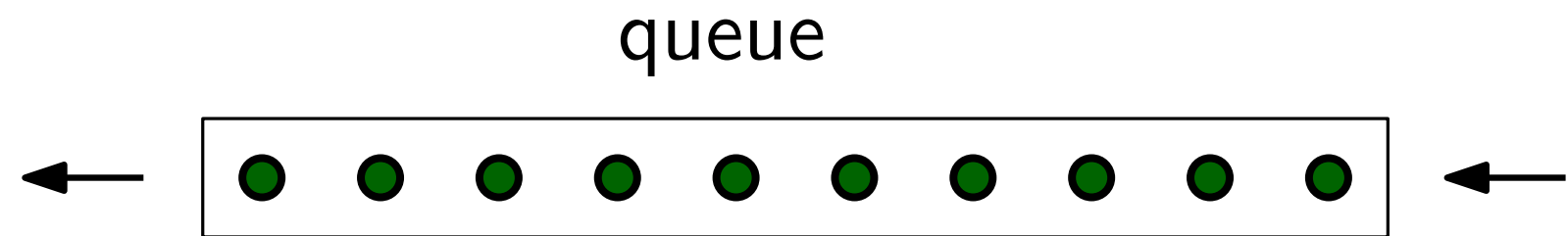
for  $i \leftarrow n$  to 1 do
   $v \leftarrow$  with largest label;
   $\sigma(i) \leftarrow v$ ;
  for  $w \in \text{Adj}(v)$  do
    |  $\text{label}(w) \leftarrow \text{label}(w).i$ ;
  end for
end for

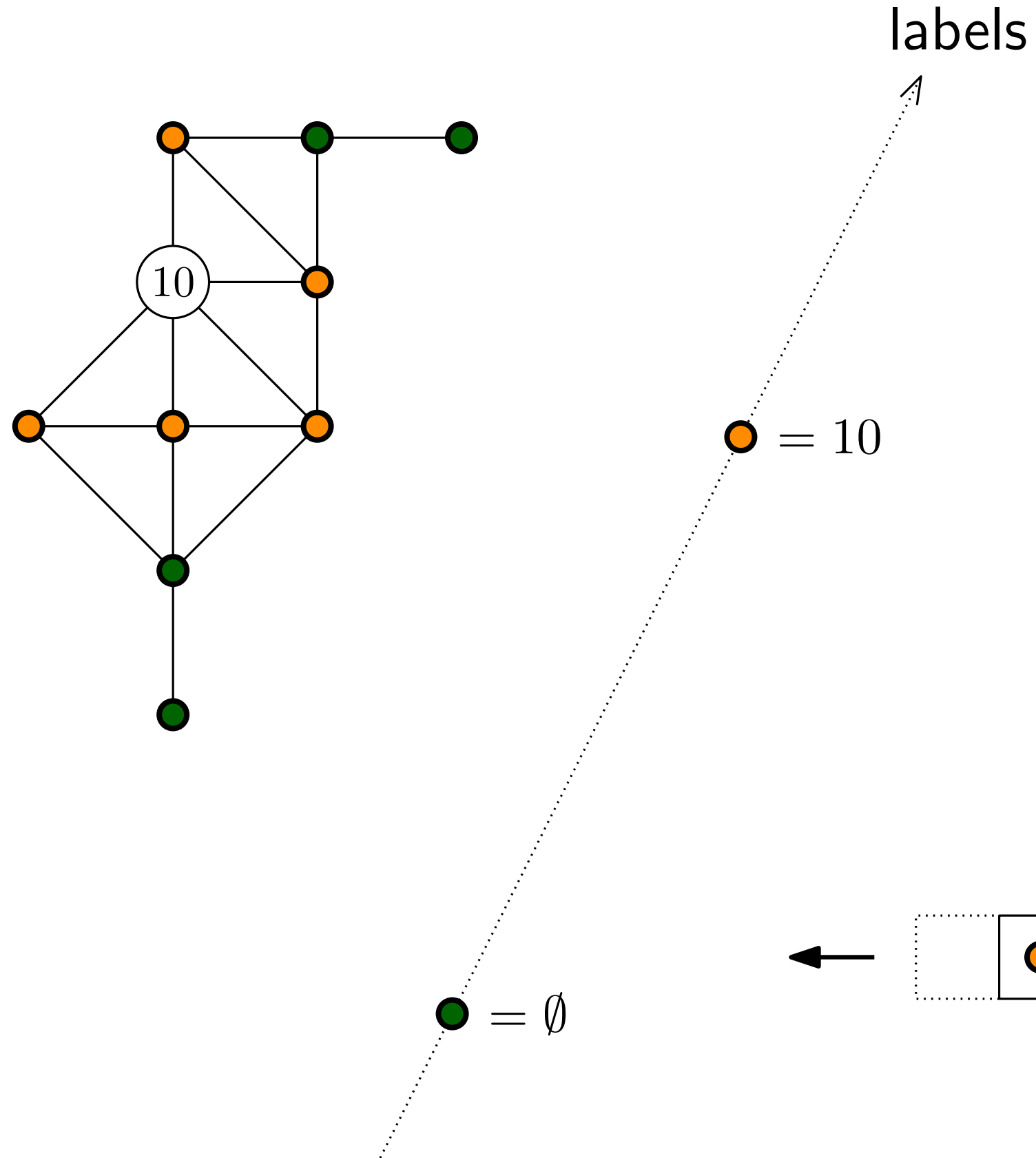
```



Algorithm **LexBFS**

```
for  $i \leftarrow n$  to 1 do  
   $v \leftarrow$  with largest label;  
   $\sigma(i) \leftarrow v$ ;  
  for  $w \in \text{Adj}(v)$  do  
    |  $\text{label}(w) \leftarrow \text{label}(w).i$ ;  
  end for  
end for
```

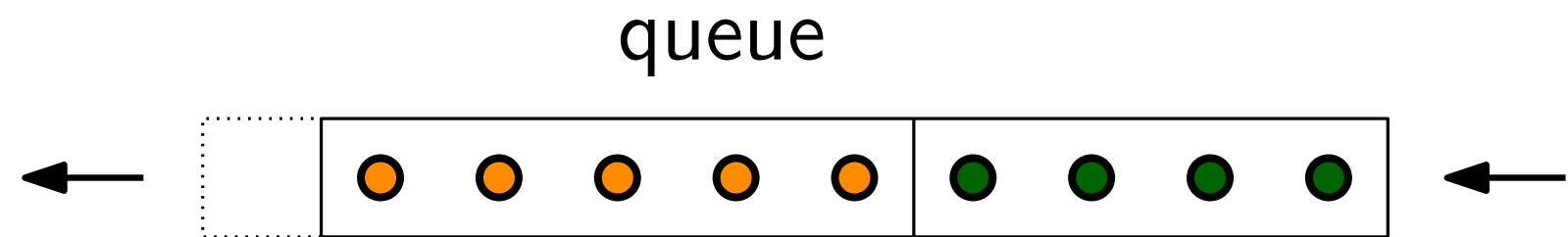


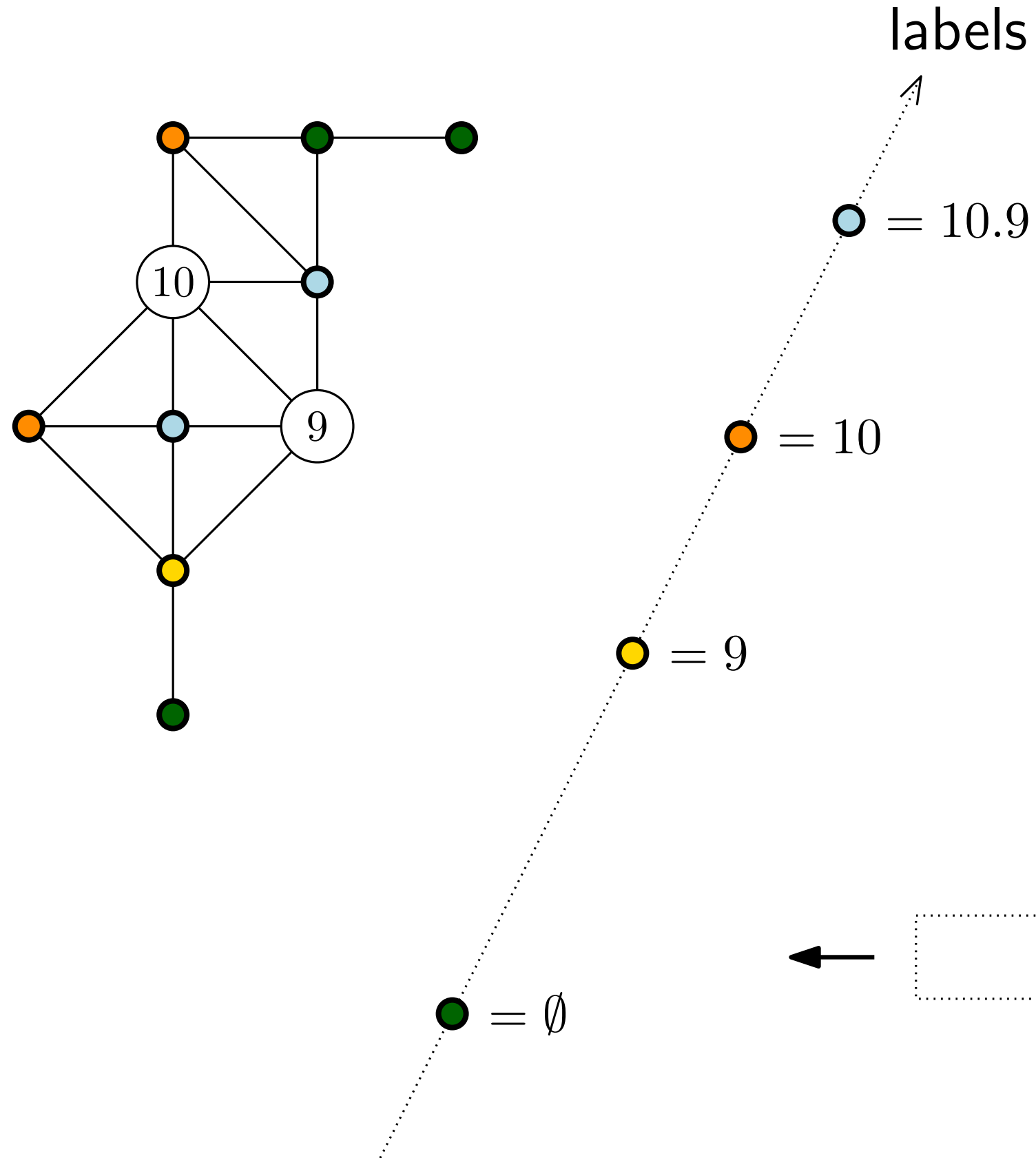


Algorithm **LexBFS**

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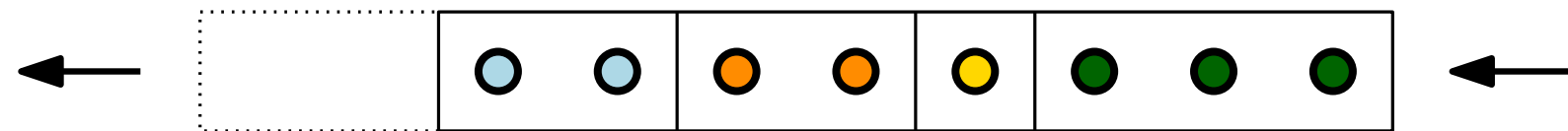


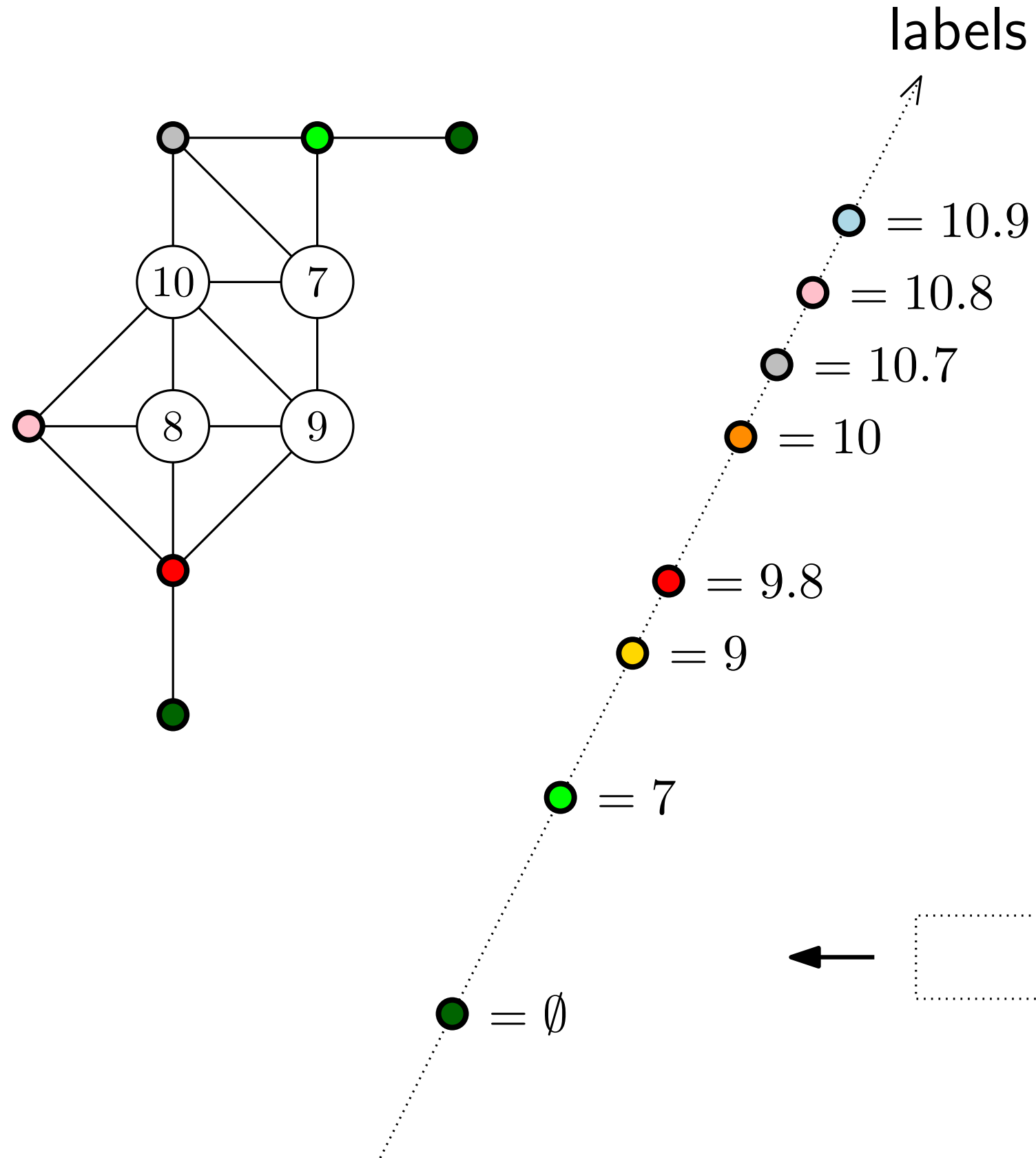
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```

queue



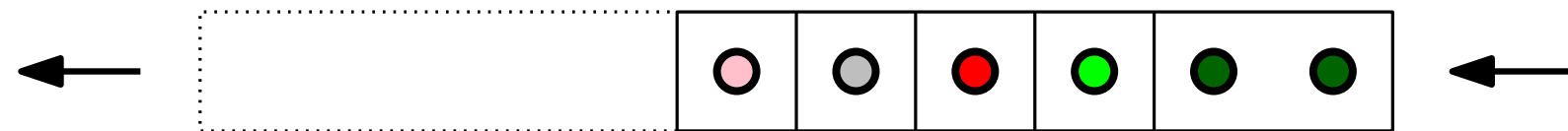


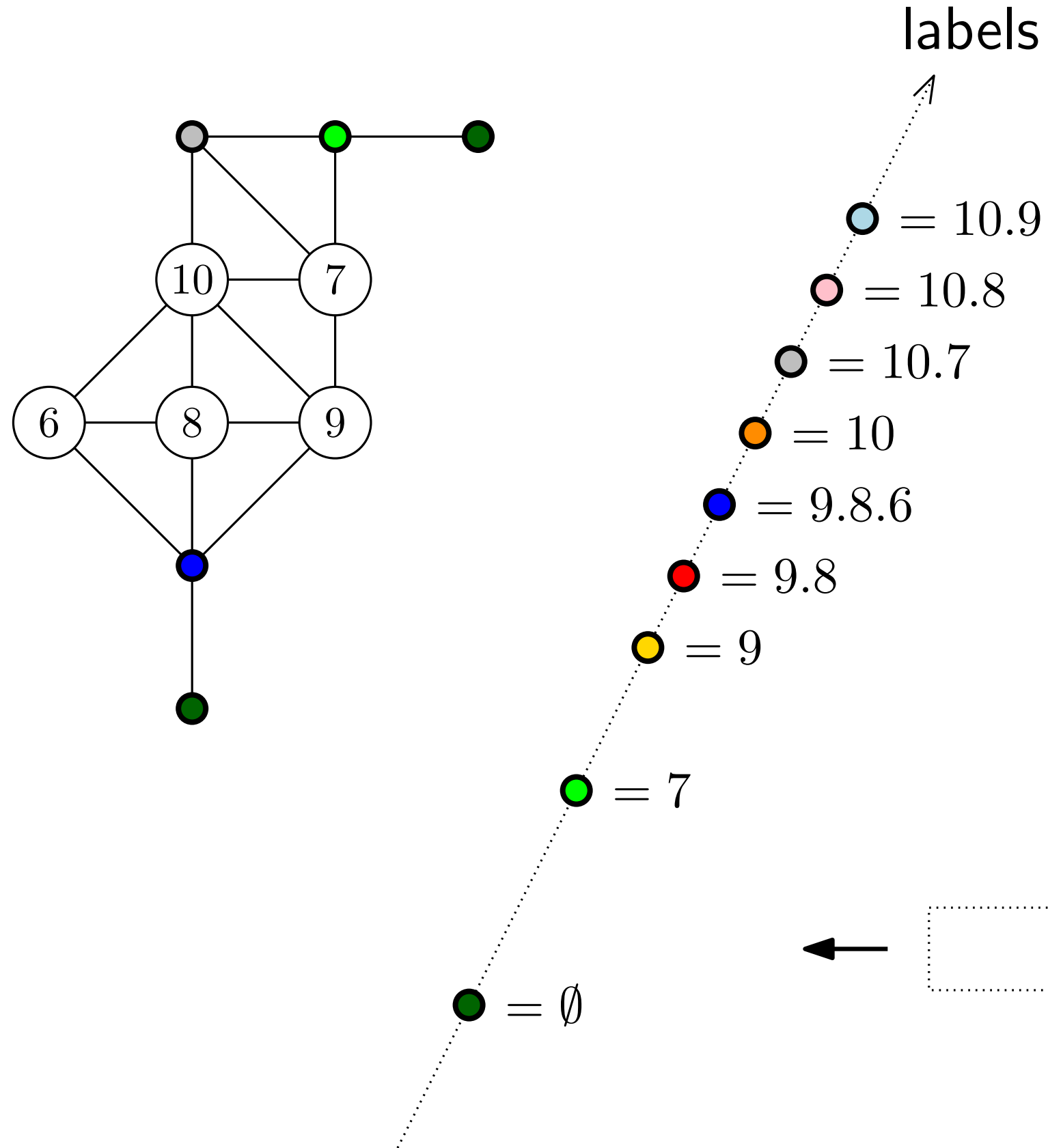
Algorithm **LexBFS**

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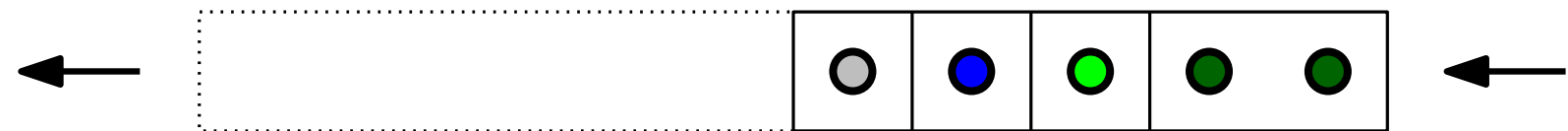


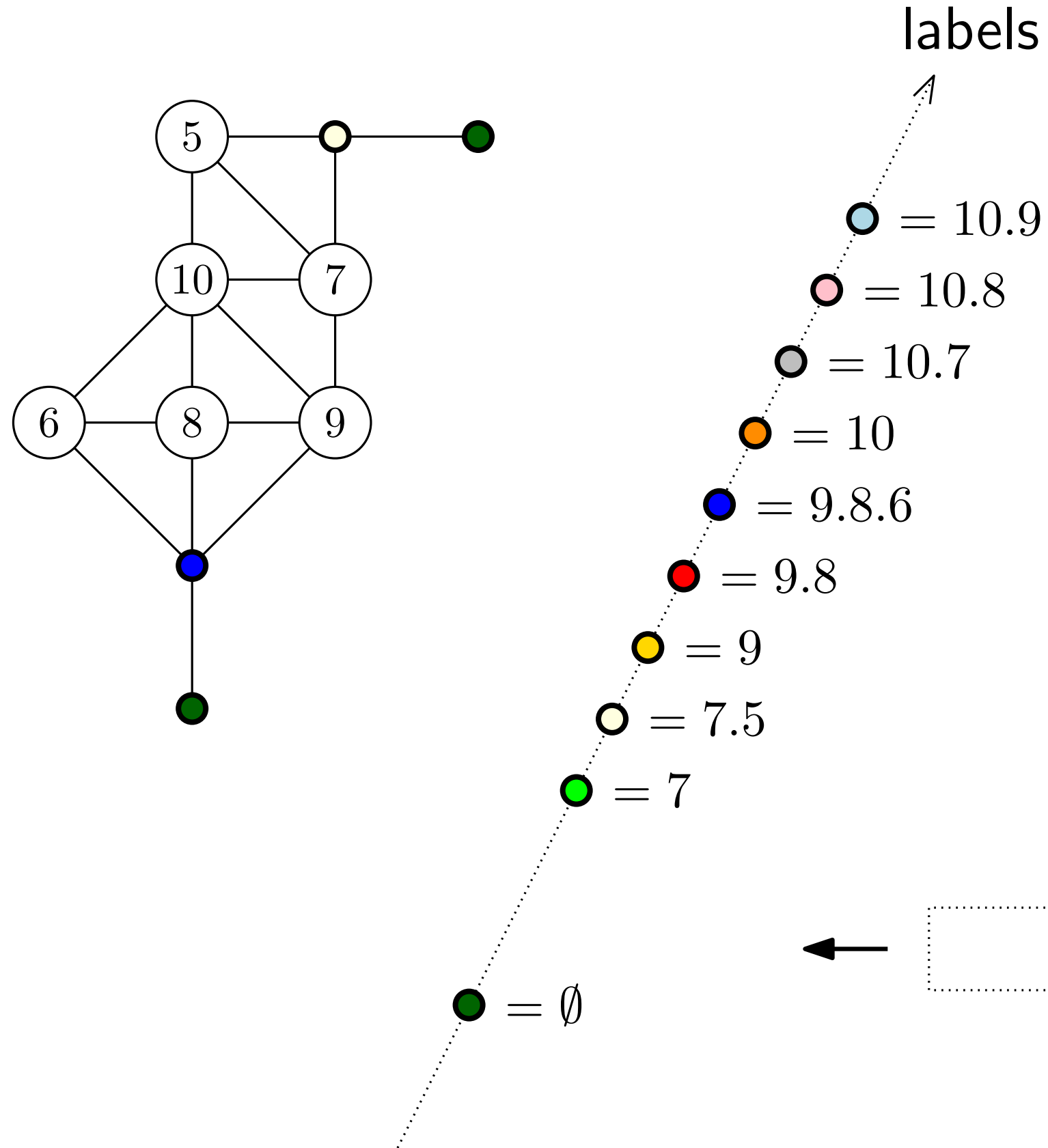
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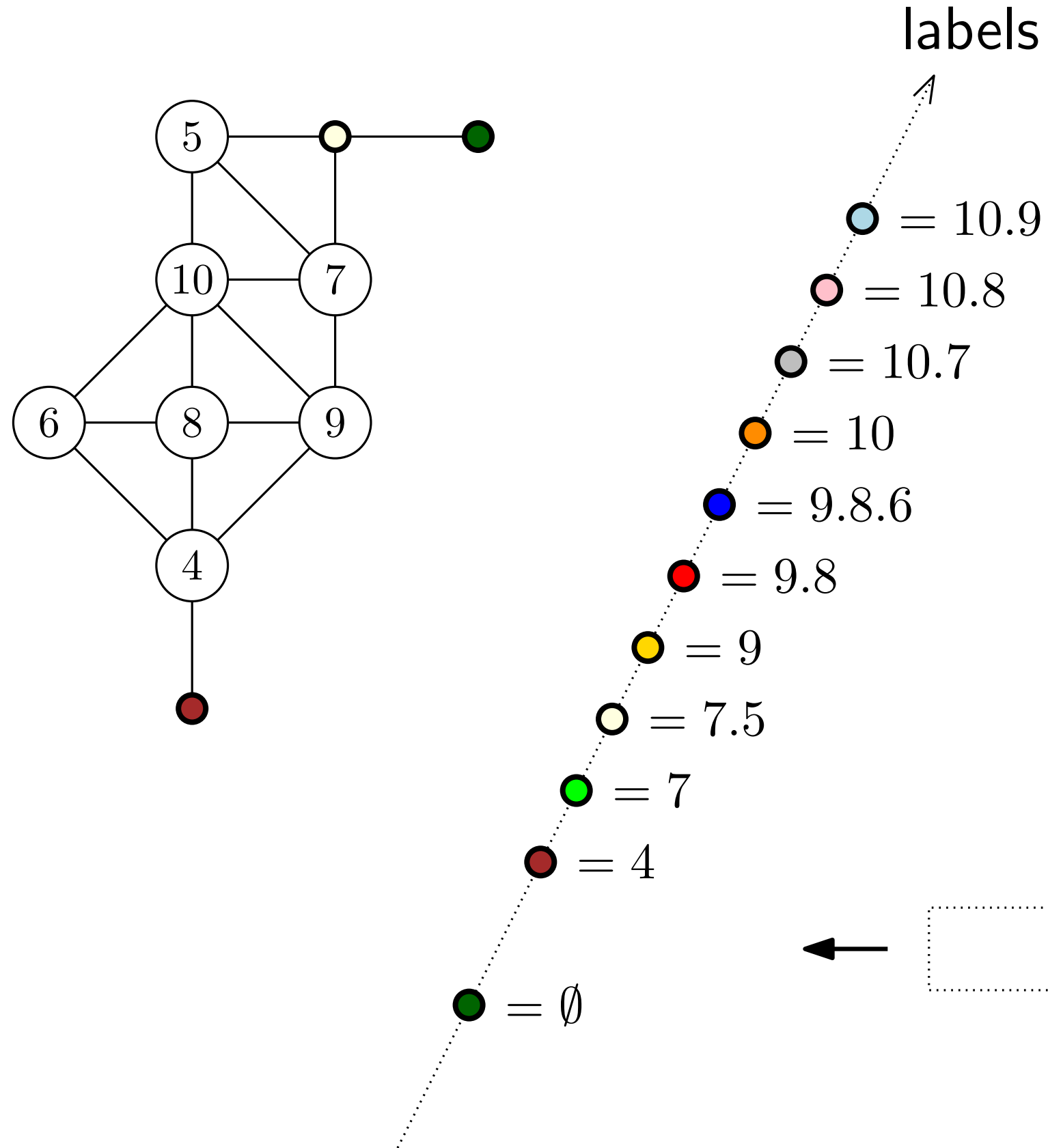
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```

queue





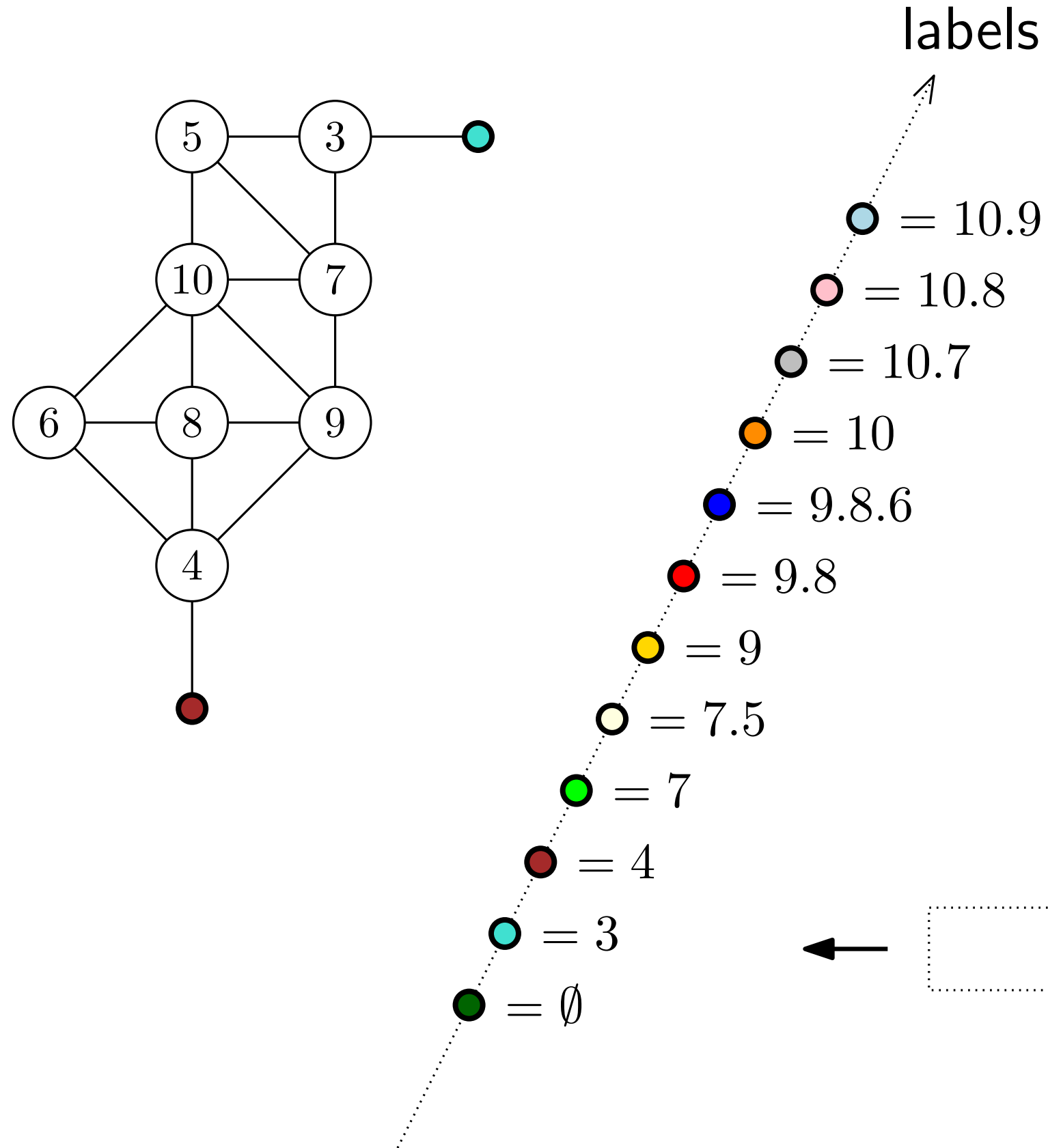
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```

queue





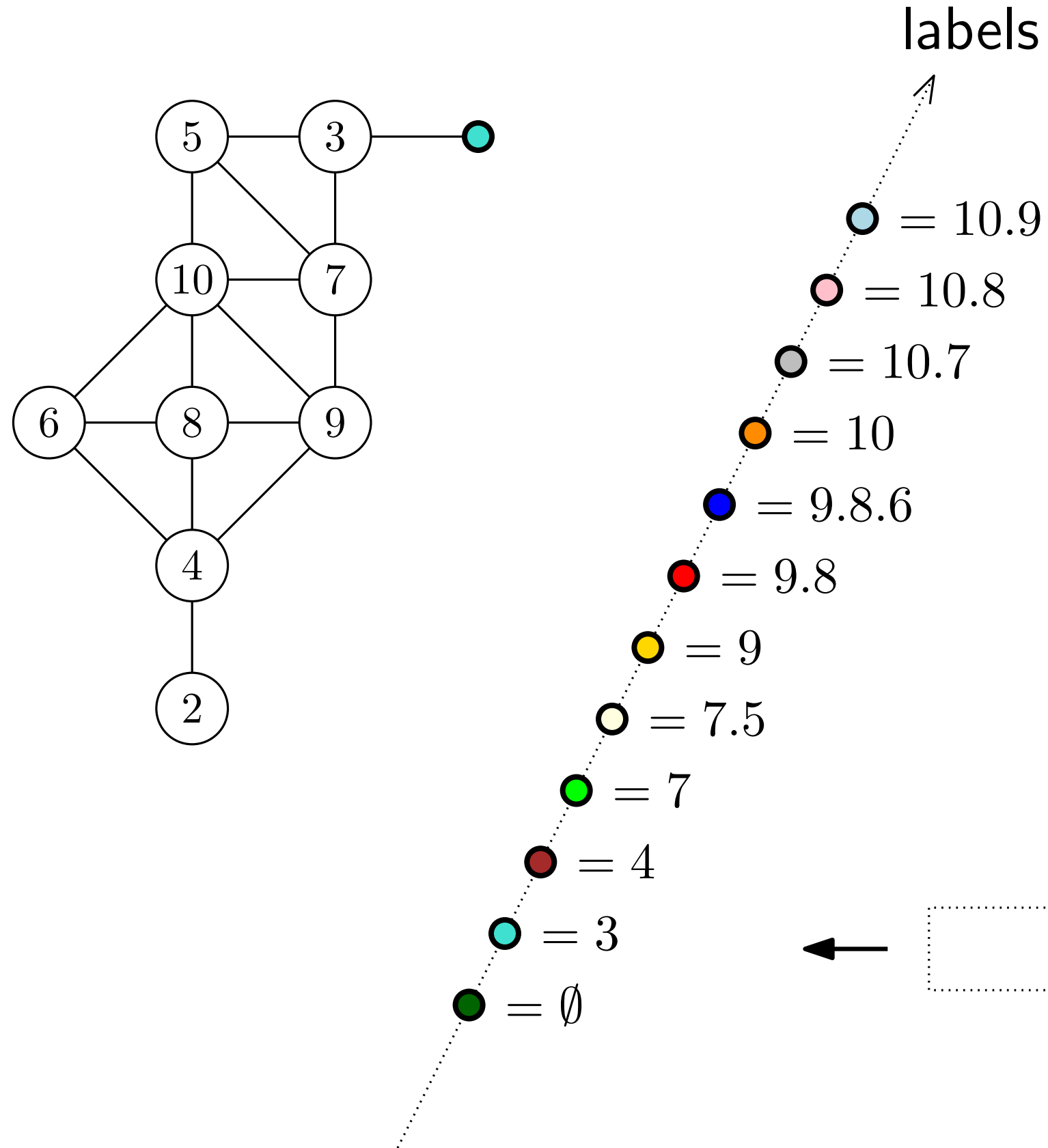
Algorithm **LexBFS**

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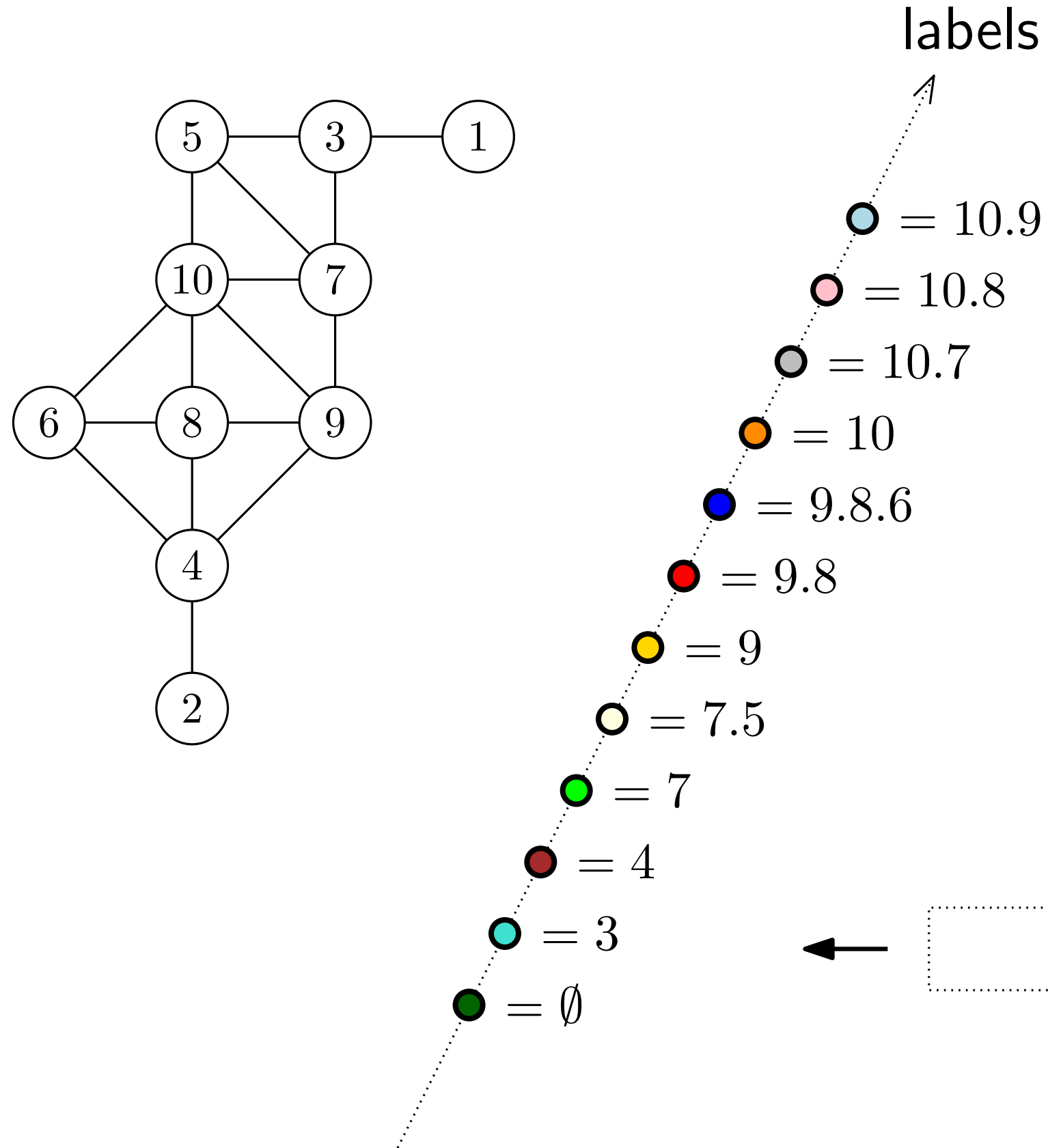
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```

queue

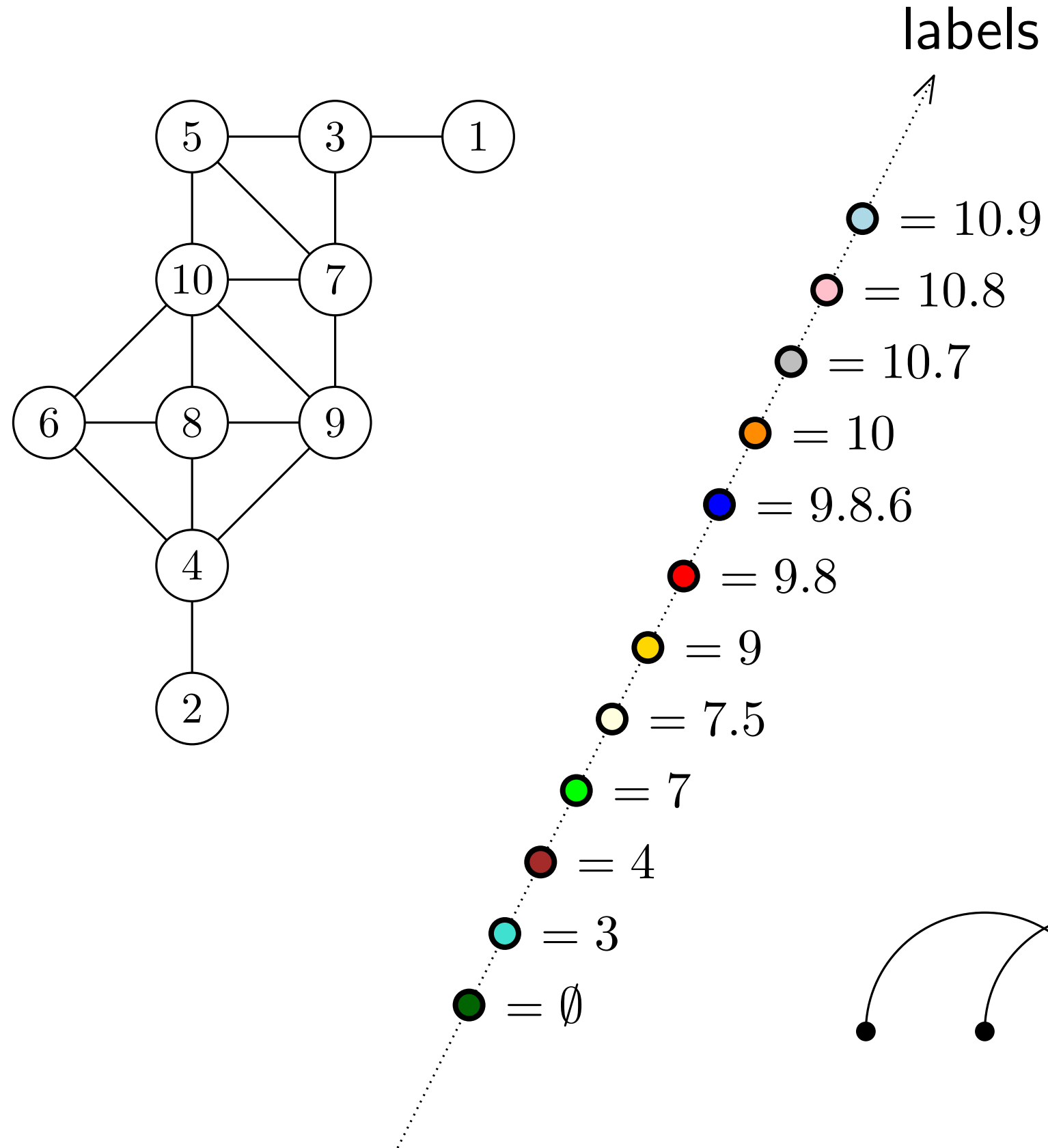




Algorithm **LexBFS**

```

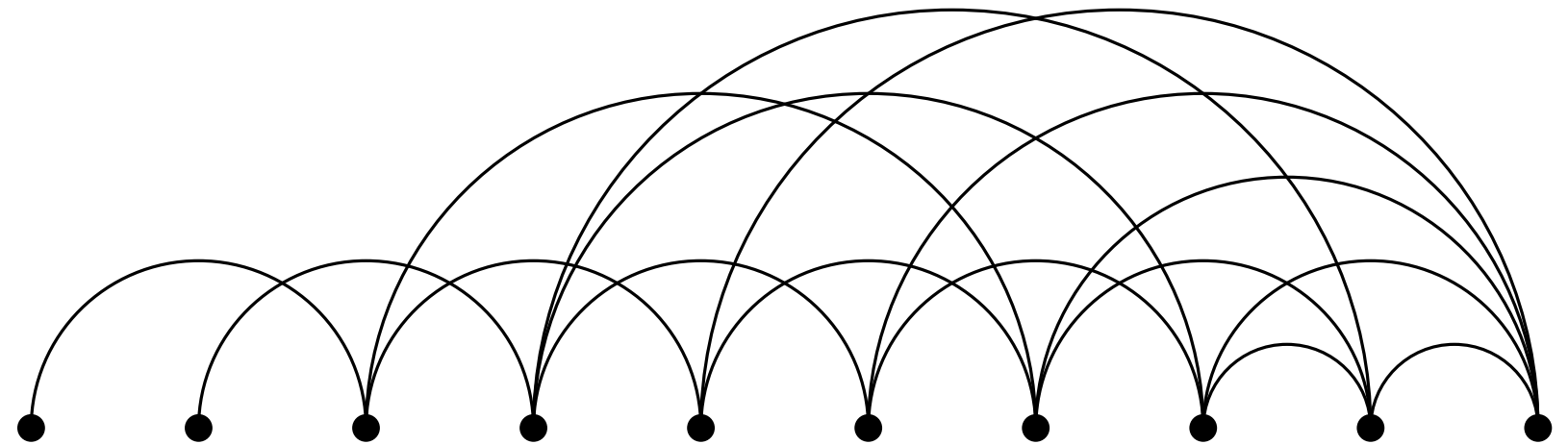
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```



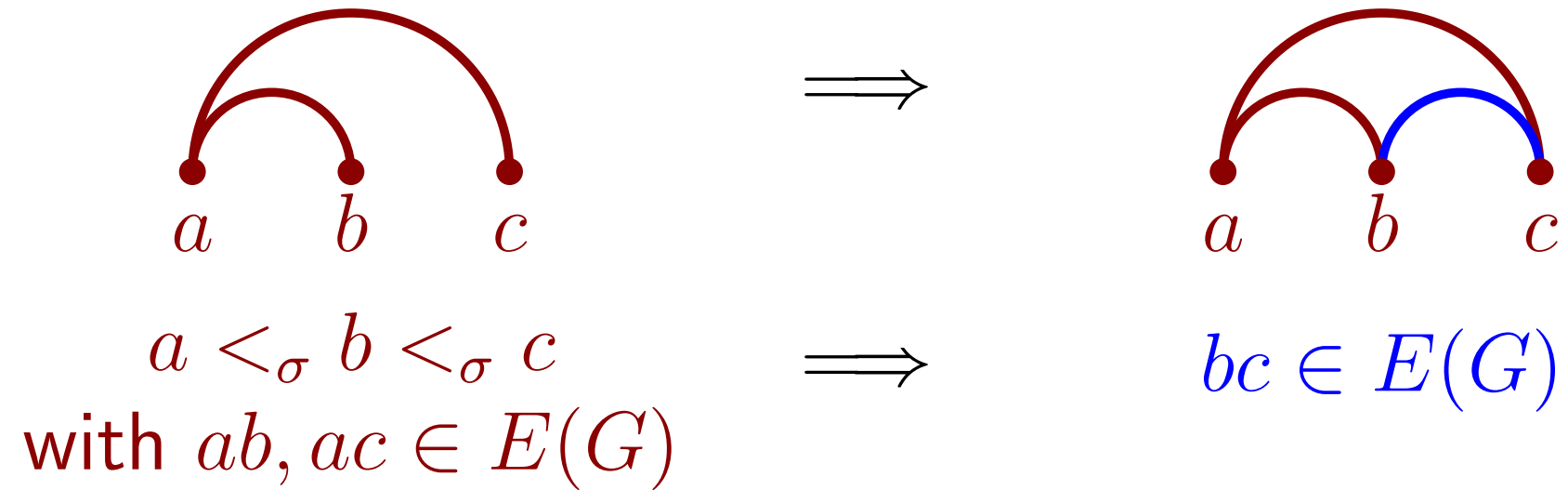
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  end for
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```



vertex ordering σ is a **PES** if and only if



vertex ordering σ is a **LexBFS-result** if and only if

