

# Graphs with Tikz

Credit: <https://github.com/HasibLearntogrow/LatexPractice>

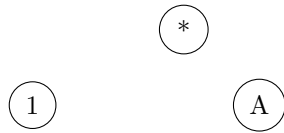
January 27, 2025

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## 1 Nodes:

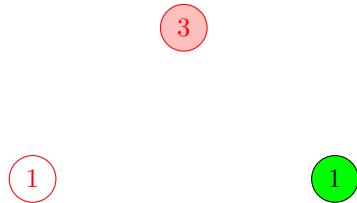
### 1.1 Normal Node:



### 1.2 Normal Nodes with various shapes:



### 1.3 Normal Nodes with filled color and face color:

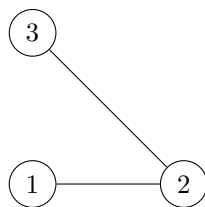


### 1.4 A solid node with outside title:

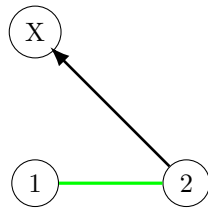


## 2 Edges:

### 2.1 Normal edge between two or more nodes:



**2.2** Normal edge with arrow and color between two or among more nodes:



**2.3** Curved edge with arrow between two or among more node:

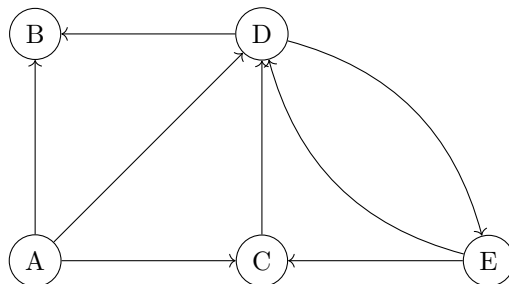


**2.4** Self loop in any node:

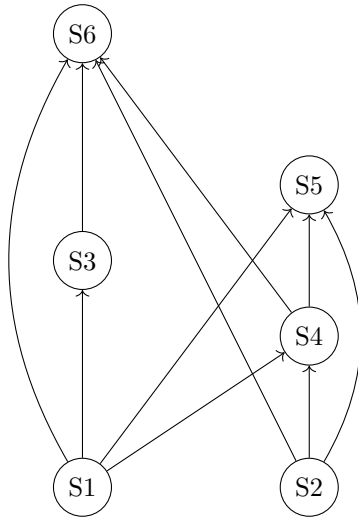


### 3 Practice:

#### 3.1 Practice 01:



### 3.2 Practice 02:

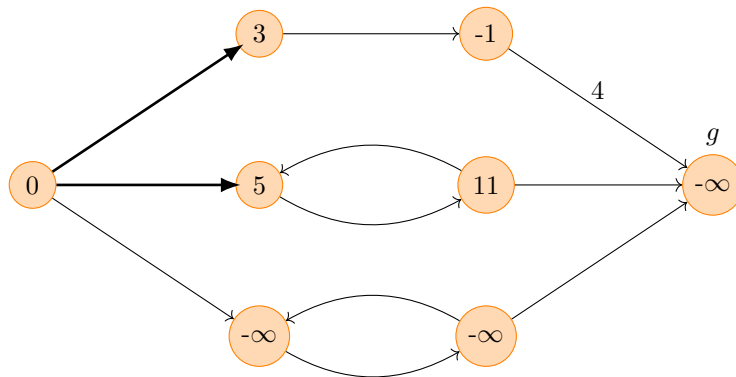


### 3.3 Practice 3:

```

1 \begin{tikzpicture}
2   \node(0) at (0,0)[circle,orange,fill= orange!30,text=black,draw
3     ]{0};
4   \node(3) at (3,2)[circle,orange,fill= orange!30,text=black,draw
5     ]{3};
6   \node(5) at (3,0)[circle,orange,fill= orange!30,text=black,draw
7     ]{5};
8   \node(i1) at (3,-2)[circle,orange,fill= orange!30,text=black,draw
9     ]{-$\infty$};
10  \node(-1) at (6,2)[circle,orange,fill= orange!30,text=black,draw
11    ]{-1};
12  \node(11) at (6,0)[circle,orange,fill= orange!30,text=black,draw
13    ]{11};
14  \node(i2) at (6,-2)[circle,orange,fill= orange!30,text=black,draw
15    ]{-$\infty$};
16  \node(i3) at (9,0)[circle,orange,fill= orange!30,text=black,label
17    =above:$g$,draw]{-$\infty$};
18  %\usetikzlibrary{arrows.meta}
19  \draw[->, >=Latex, line width=1pt, shorten >=-2pt] (0) to (3);
20  \draw[->, >=Latex, line width=1pt, shorten >=-2pt] (0) -- (5);
21  \draw[->] (0) to (i1);
22  \draw[->] (3) to (-1);
23  \draw[->, bend right =30] (5) to (11);
24  \draw[->, bend right =30] (11) to (5);
25  \draw[->, bend right =30] (i1) to (i2);
26  \draw[->, bend right =30] (i2) to (i1);
27  \draw[->] (-1) to node[midway, above]{4}(i3);
28  \draw[->] (11) to (i3);
29  \draw[->] (i2) to (i3);
30 \end{tikzpicture}

```



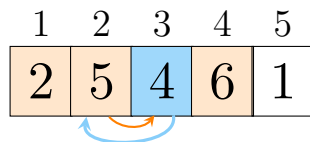
### 3.4 Practice 04:

```

1 \begin{tikzpicture}
2   \node(2) at (0,0)[text=black,fill=orange!20,label=\Large 1,draw,
3     scale=2]{2};
4   \node(5) at (0.8,0)[text=black,fill=orange!20,label=\Large 2,draw,
5     scale=2]{5};
6   \node(4) at (1.6,0)[text=black,fill=skyblue!80,label=\Large 3,
7     draw,scale=2]{4};
8   \node(6) at (2.4,0)[text=black,fill=orange!20,label=\Large 4,draw,
9     scale=2]{6};
10  \node(1) at (3.2,0)[text=black,label=\Large 5,draw,scale=2]{1};

11  \draw[->,>=stealth,very thick,skyblue,bend left=100](1.75,-0.45)
12    to (0.6,-0.47);
13  \draw[->,>=stealth,thick,orange,bend angle=50,bend right
14    ](0.9,-0.47) to (1.5,-0.45);
15 \end{tikzpicture}

```



### 3.5 Practice 05:

```

1 \begin{tikzpicture}
2   \node(0) at (0,0)[text=black,fill=skyblue!80,draw,scale=4]{};
3   \node at (0.95,0)[text=black,fill=skyblue!80,draw,scale=2.7]{\
4     tiny1};
5   \node(1) at (1.9,0)[text=black,fill=skyblue!80,draw,scale=4]{};
6
7   \node(2) at (4,0)[text=black,fill=orange!40,draw,scale=4]{};
8   \node at (4.95,0)[text=black,fill=orange!40,draw,scale=2.7]{\tiny
9     2};
10  \node(3) at (5.9,0)[text=black,fill=orange!40,draw,scale=4]{};
11
12  \node(4) at (8,0)[text=black,fill=skyblue!80,draw,scale=4]{};
13  \node at (8.95,0)[text=black,fill=skyblue!80,draw,scale=2.7]{\
14    tiny3};
15  \node(5) at (9.9,0)[text=black,fill=skyblue!80,draw,scale=4]{};
16
17  \node(6) at (12,0)[text=black,fill=orange!40,draw,scale=4]{};
18  \node at (12.95,0)[text=black,fill=orange!40,draw,scale=2.7]{\
19    tiny4};
20  \node(7) at (13.9,0)[text=black,fill=orange!40,draw,scale=4]{};
21
22  \draw[->,>=stealth,pos=1](2.35,0.2) to (3.5,0.2);
23  \draw[->,>=stealth,thick] (3.5,-0.2)to(2.35,-0.2) ;
24  \draw[->,>=stealth,pos=1](6.35,0.2) to (7.5,0.2);
25  \draw[->,>=stealth,pos=1](7.5,-0.2) to (6.35,-0.2);
26  \draw[->,>=stealth,pos=1](10.35,0.2) to (11.5,0.2);
27  \draw[->,>=stealth,pos=1](11.5,-0.2) to (10.35,-0.2);
28
29  \draw[->](0.south) to(0,-1)to(15,-1) to (15,0)to(7.east);
30  \draw[->](7.north) to(13.9,1)to(-1,1) to (-1,0)to(0.west);

```

