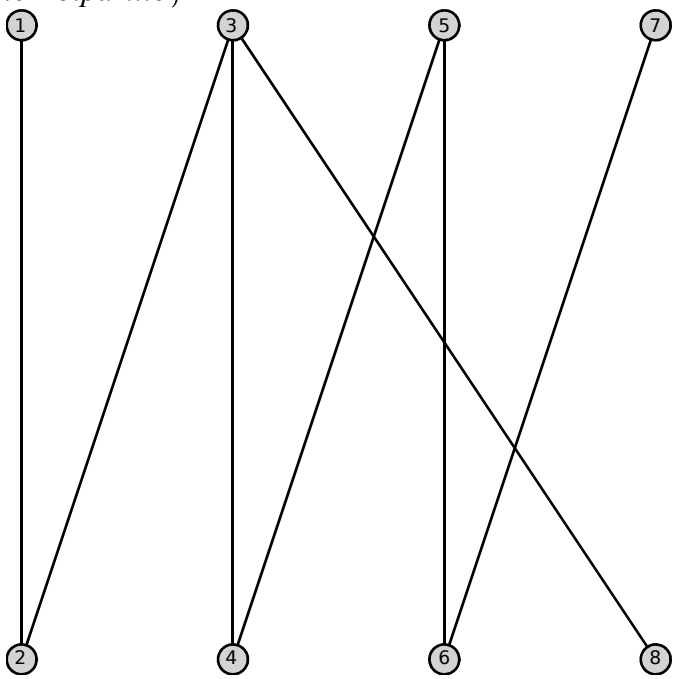
```
> with(GraphTheory):
> G := Graph({{1, 2}, {2, 3}, {3, 4}, {3, 8}, {4, 5}, {5, 6}, {6, 7}})
```

$$G := \text{Graph 2: an undirected unweighted graph with 8 vertices and 7 edge(s)} \quad \textbf{(1)}$$

```
> B := BipartiteMatching(G)
```

$$B := 4, \{\{1, 2\}, \{3, 8\}, \{4, 5\}, \{6, 7\}\} \quad \textbf{(2)}$$

```
> DrawGraph(G, style = bipartite)
```



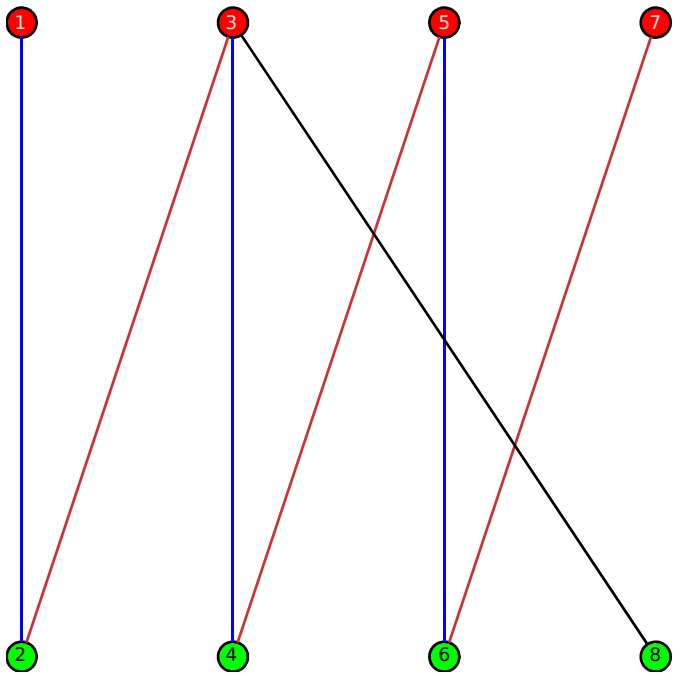

```
> ChromaticNumber(G)
```

$$2 \quad \textbf{(3)}$$

```
> HighlightVertex(G, {1, 3, 5, 7}, red)
> HighlightVertex(G, {2, 4, 6, 8}, green)
> EdgeChromaticNumber(G)
```

$$3 \quad \textbf{(4)}$$

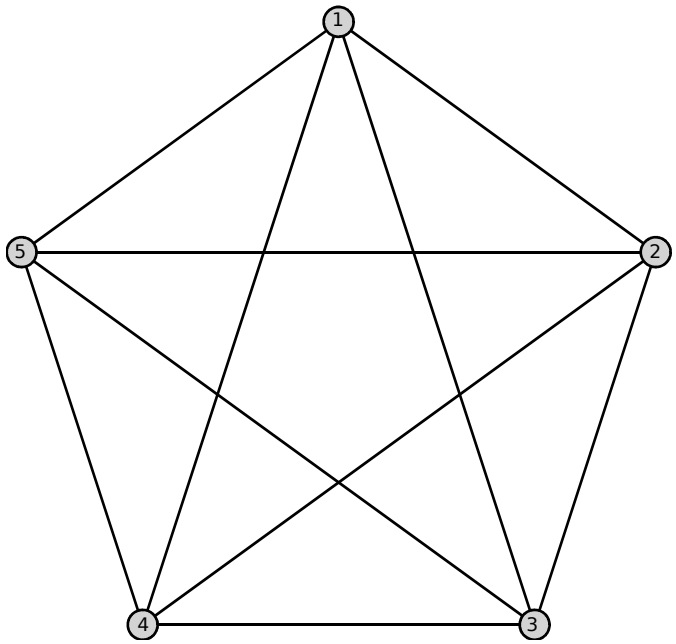
```
> HighlightEdges(G, {{1, 2}, {3, 4}, {5, 6}}, blue)
> HighlightEdges(G, {{2, 3}, {4, 5}, {6, 7}}, orange)
> DrawGraph(G, style = bipartite)
```




```
> with(GraphTheory):
> G0 := CompleteGraph(5)
```

$$G0 := \text{Graph 3: an undirected unweighted graph with 5 vertices and 10 edge(s)} \quad \textbf{(5)}$$

```
> DrawGraph(G0)
```




```
> ChromaticNumber(G0)
```

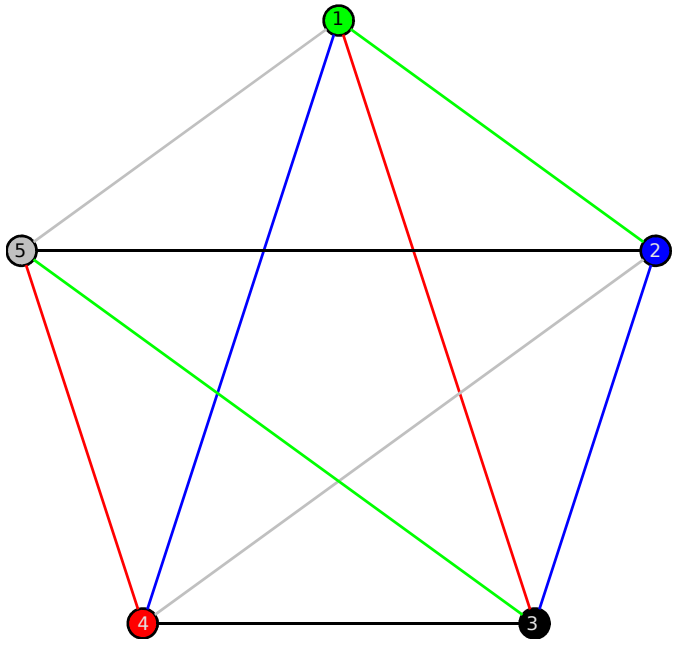
$$5 \quad \textbf{(6)}$$

```
> HighlightVertex(G0, 1, green)
> HighlightVertex(G0, 2, blue)
> HighlightVertex(G0, 3, black)
> HighlightVertex(G0, 4, red)
> HighlightVertex(G0, 5, gray)
```

```
> EdgeChromaticNumber(G0)
```

5 **(7)**

```
> HighlightEdges(G0, {{1, 2}, {3, 5}}, green)
> HighlightEdges(G0, {{2, 3}, {1, 4}}, blue)
> HighlightEdges(G0, {{3, 4}, {2, 5}}, black)
> HighlightEdges(G0, {{4, 5}, {1, 3}}, red)
> HighlightEdges(G0, {{5, 1}, {2, 4}}, gray)
> DrawGraph(G0)
```




```
>
```