Cory Glover
1/29/20
Math 525

1. The left most 4 nodes.

2.

1. $\{3, 4, 5, 6\}$.
2. The entire graph.

3.

1. This is impossible since if a graph has a 3-component, then there exists at least 3 independent paths between all nodes in the component. Since $3 > 2$, there exists at least 2 independent paths between all nodes in the component. So the 3-component is a 2-component.
2. A graph with 4 nodes forming a square is a 2-component but has no 3-component.
3. This is impossible since if the graph has two 3-components. Thus each of the three components is 2-component. So there are at least two 2-components by the same argument as part 1.

4.

1. $\frac{3}{8}$
2. $C_1 = \frac{1}{5}, C_7 = \frac{1}{3}$
3. $R_1 = 1, R_6 = \frac{4}{3}$