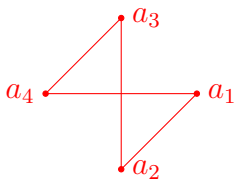
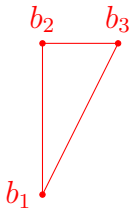
Answer Key

1. Multiple solutions, but here are some examples:

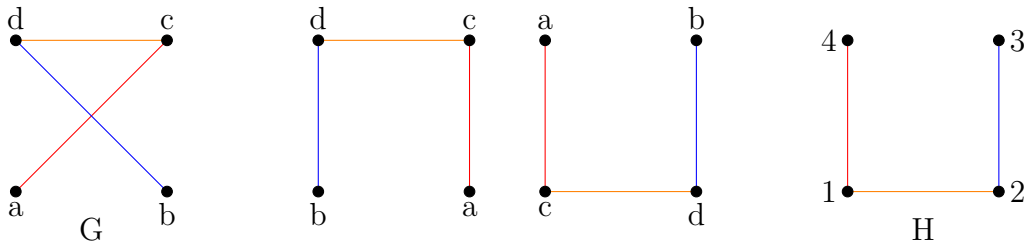
a. Example:



b. Example:



2.



a. Vertex Map:

G	a	b	c	d
H	4	3	1	2

b. Edge Map:

G	{a, c}	{c, d}	{d, b}
H	{4,1}	{1,2}	{2,3}

3. a. Write out all edges for both graphs.

   G:

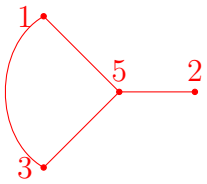
   {2, 5} { 1, 5 } { 1, 3 } { 3, 5 }
   { 2, 5 } { 2, 6 } { 2, 4 } { 4, 6 }

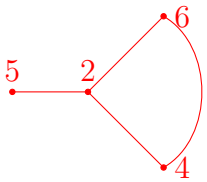
   H:

   {d, c} { a, b } { b, c } { a, c } { c, d }
   { c, f } { c, g } { f, g }

   b. For each edge from G, write out what edge in H corresponds to it. Example: {2,5} → {d, c}

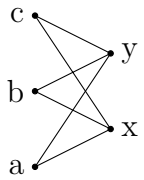
   Let's split up G into two subgraphs to see it more clearly...



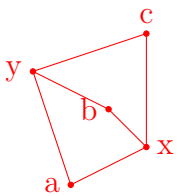


$\{1,3\} \to \{b,a\}$ $\{1,5\} \to \{b,c\}$ $\{2,4\} \to \{d,e\}$
$\{2,5\} \to \{d,c\}$ $\{2,6\} \to \{d,f\}$ $\{3,5\} \to \{a,c\}$
$\{4,6\} \to \{e,f\}$

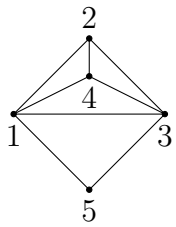
4.



Example:

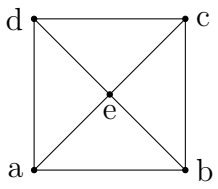


5. a.



1, 2, 4, 1 1, 3, 5, 1 2, 3, 4, 2
1, 3, 4, 1 1, 2, 3, 5, 1 (unbounded).

b.



a, b, e, a a, e, d, a d, e, c, d b, c, e, b
a, b, c, d, a (unbounded)