1.

A = {'c', 'd', 'a', 'b'}

B = {'x', 'z', 'y', 'w', 'v'}

f = {('a', 'z'), ('c', 'x'), ('d', 'w'), ('b', 'y')}

The function is an injective function

2.

A = {'c', 'd', 'a', 'b'}

B = {'x', 'y', 'z'}

f = {('a', 'z'), ('c', 'x'), ('d', 'z'), ('b', 'y')}

The function is a surjective function

3.

A = {'c', 'd', 'a', 'b'}

B = {'x', 'w', 'y', 'z'}

f = {('a', 'z'), ('c', 'x'), ('d', 'w'), ('b', 'y')}

The function is a bijective function

The inverse function is {('x', 'c'), ('w', 'd'), ('y', 'b'), ('z', 'a')}

4.

A = {'c', 'd', 'a', 'b'}

B = {1, 2, 3, 4, 5}

f = {('a', 4), ('b', 5), ('c', 1), ('d', 3)}

The function is an injective function

5.

A = {'c', 'a', 'b'}

B = {1, 2, 3, 4}

f = {('b', 4), ('c', 1), ('a', 3)}

The function is an injective function

6.

A = {'c', 'd', 'a', 'b'}

B = {1, 2, 3}

f = {('b', 1), ('a', 2), ('d', 2), ('c', 3)}

The function is a surjective function

7.

A = {'c', 'd', 'a', 'b'}

B = {1, 2, 3, 4}

f = {('a', 4), ('b', 1), ('d', 2), ('c', 3)}

The function is a bijective function

The inverse function is {(2, 'd'), (1, 'b'), (3, 'c'), (4, 'a')}

8.

A = {'c', 'd', 'a', 'b'}

B = {1, 2, 3, 4}

f = {('d', 3), ('b', 1), ('a', 2), ('c', 2)}

Just a function

9.

A = {'c', 'a', 'b'}

B = {1, 2, 3, 4}

f = {('a', 4), ('b', 1), ('a', 2), ('c', 3)}

Sorry, not a function