Since in the second string immediately above $g_{i-1}$ is followed by $g_j$, there is one breakpoint after $g_{i-1}$. Similarly, since $g_i$ is followed by $g_{j+1}$, there is another breakpoint just before $g_{j+1}$. The inversion has produced two breakpoints.

Let's now return to our previous example $G = 3\ 7\ 2\ 6\ 4\ 1\ 5$. We want this to represent a linear sequence of permuted elements. This means that the first element is preceded by a breakpoint and the last element is followed by a breakpoint. That is, for a sequence of $n$ elements there are $n+1$ potential breakpoints. By our definition, in this example with $n = 7$ there are eight potential breakpoints. Instead of transforming $G$ to $I$ by transposition of elements, we can effect this transformation by successive inversions (reversals) of two or more elements (brackets enclosing the elements to be inverted in each step):

```
G:   [3 7 2 6 4 1]5
           ⇓          1 break-point removed (the one
                      preceding the first element)
      1[4 6 2]7 3 5
           ⇓
                      1 break-point removed
      1 2[6 4 7 3]5
           ⇓
                      2 break-points removed
      1 2 3[7 4]6 5
           ⇓
                      2 break-points removed
      1 2 3 4[7 6 5]
           ⇓          1 break-point removed
                      (the connection to 1 counted in
I:    1 2 3 4 5 6 7   first step)
```

As we see from this example, we have removed the seven breakpoints that were in the original sequence. It should be clear that the maximum number of breakpoints that can be removed by a reversal is 2. Note that the reversals do not always remove two breakpoints.

We define $d(G, I)$ as the *minimum number of reversals* required to convert $G$ into $I$. Notice that reversals destroy breakpoints during the transformation process. If the *number of breakpoints* in $G$ is $b(G)$, then it should be clear that

$$d(G, I) \geq b(G)/2.$$

Also, each reversal can remove at least one breakpoint, so

$$d(G, I) \leq b(G)$$

and it follows that

$$b(G)/2 \leq d(G, I) \leq b(G).$$

Let's check this against the example that we just used. We should recognize that there is a breakpoint just before 3 in $G$ (that element should have been