

## Exercise 4.7 Return in functions

```
1 {a,b,c,d,e,f,g,h,i,j,k,l#}::Indices(position=independent).
2
3 # -----
4 # this function uses in-place changes for obj
5
6 def tidy (obj):
7
8     sort_product    (obj)
9     rename_dummies  (obj)
10    canonicalise     (obj)
11
12    foo := C^{f} B^{a} A_{f a}.           # cdb (ex-0407.101,foo)
13    tidy (foo)                           # cdb (ex-0407.102,foo)
14
15 # -----
16 # this function creates new objects,
17 # it will not give the correct result
18
19 def tidy (obj):
20
21    bah := @(obj).
22
23    sort_product    (bah)
24    rename_dummies  (bah)
25    canonicalise     (bah)
26
27    obj := @(bah).
28
29    foo := C^{f} B^{a} A_{f a}.           # cdb (ex-0407.201,foo)
30    tidy (foo)                           # cdb (ex-0407.202,foo)
31
32 # -----
33 # this function uses a return statement
34 # it will give the correct result
35
36 def tidy (obj):
```

```

37
38   bah := @(obj).
39
40   sort_product   (bah)
41   rename_dummies (bah)
42   canonicalise   (bah)
43
44   obj := @(bah).
45
46   return obj
47
48   foo := C^{f} B^a A_{fa} A_{f a}.           # cdb (ex-0407.301,foo)
49   foo = tidy (foo)                          # cdb (ex-0407.302,foo)

```

$$C^f B^a A_{fa} = A_{ab} B^b C^a \quad (\text{ex-0407.102})$$

$$C^f B^a A_{fa} = C^f B^a A_{fa} \quad (\text{ex-0407.202})$$

$$C^f B^a A_{fa} = A_{ab} B^b C^a \quad (\text{ex-0407.302})$$