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1.

a) [apple, z, bee|[z,car,door]] = [X| [bee,Y|[Q| R]]]

[apple, z,bee|[z|[car, door]] = [X, bee, Y,|[Q| R]]]

$$X = apple$$

$$Q = z = Y = bee$$

$$R = [car, door]$$

$$\therefore Success$$

b) $[a, [Y | [b, c]], d] = [a, [b, [b, c]] | Z]$

$[a, [Y, b, c], d]$ $[a, [b, [b, c]] | Z]$

$\therefore \quad\quad\quad Y = b$

Fails as $[Y, b, c]$ and
$[b, [b, c]]$ cannot be
unified.

c) $[z \mid [z \mid [[z \mid [[z]]]]]]$ & $[b \mid Y]$

$\therefore \quad z = b$

$Y = [z \mid [z \mid [[z \mid [[z]]]]]]$

succeeds

d)   [U|[W| [u]] & [the, quick, brown,
                              fox, W]

[U, W, u]

      ∴   U = the   W = quick

      Fails as there is a contradiction

      U = the ≠ brown

e) [Did|[[An, X] |[ever, Win, An, X]]]
           & [Only,, [One, oscar][[Did, X, hammerstein
                    TheSecond]]

i) [Did,[An, X] ,ever, Win, An, X]

ii) [Only, [On e, oscar], Did, X, hammerstein, The Second]

∴ᵘ   The Second = X = Win = oscar
              Did = Only = ever
              An = Onc = hammerstein
           succeeds