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

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

$\therefore \qquad Y = b$

Fails as $[Y, b, c]$ and

$[b, [b, c]]$ cannot be

unified.

c) $[z | [z | [[z | [[z]]]]]]$ & $[b | y]$

$$\therefore \quad z = b$$
$$y = [z | [z | [[z | [[z]]]]]]$$

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, [One, oscar], Did, X, hammerstein, TheSecond]

∴ The Second = X = Win = oscar
              Did = Only = ever

              An = One = hammerstein

              succeeds