Q3:

$z = a$.

$y\ z \quad \Rightarrow \quad y : a \to b$.

$(y\ z) : b$.

$x\ z \quad \Rightarrow \quad x : a \to d$.

$(x\ z) : d$.

$(x\ z)\ (y\ z) \Rightarrow \quad d : b \to c$.

$\therefore x : a \to b \to c$.

$y : a \to b$.

$z = a$.

$(x\ z)\ (y\ z) : c$.

$S = \text{fun } x \to (\text{fun } y \to (\text{fun } z \to (x\ z)\ (y\ z)))$

$S : (x : a \to b \to c) \to (y : a \to b) \to (z = a) \to c$.

Q4.

For float → float, the calling context promises to supply values of type float, but the function int → int only know how to deal with int as input, which is only a special case of float (int ◁ float). int → int does not know how to deal with float, so int → int is not a subtype of float → float.