Ex 13

$$f \circ g = id$$

$$g \circ f = id$$

$$= id_{FB}$$

$$Ff \circ Fg$$

$$= F(f \circ g)$$

$$= F\,id = id$$

and ↻

Ex 14

$f : A \to B$

Maybe f : Maybe A → Maybe B

Maybe f nothing = nothing

Maybe f (just a) = just (f a)

- Maybe id = id

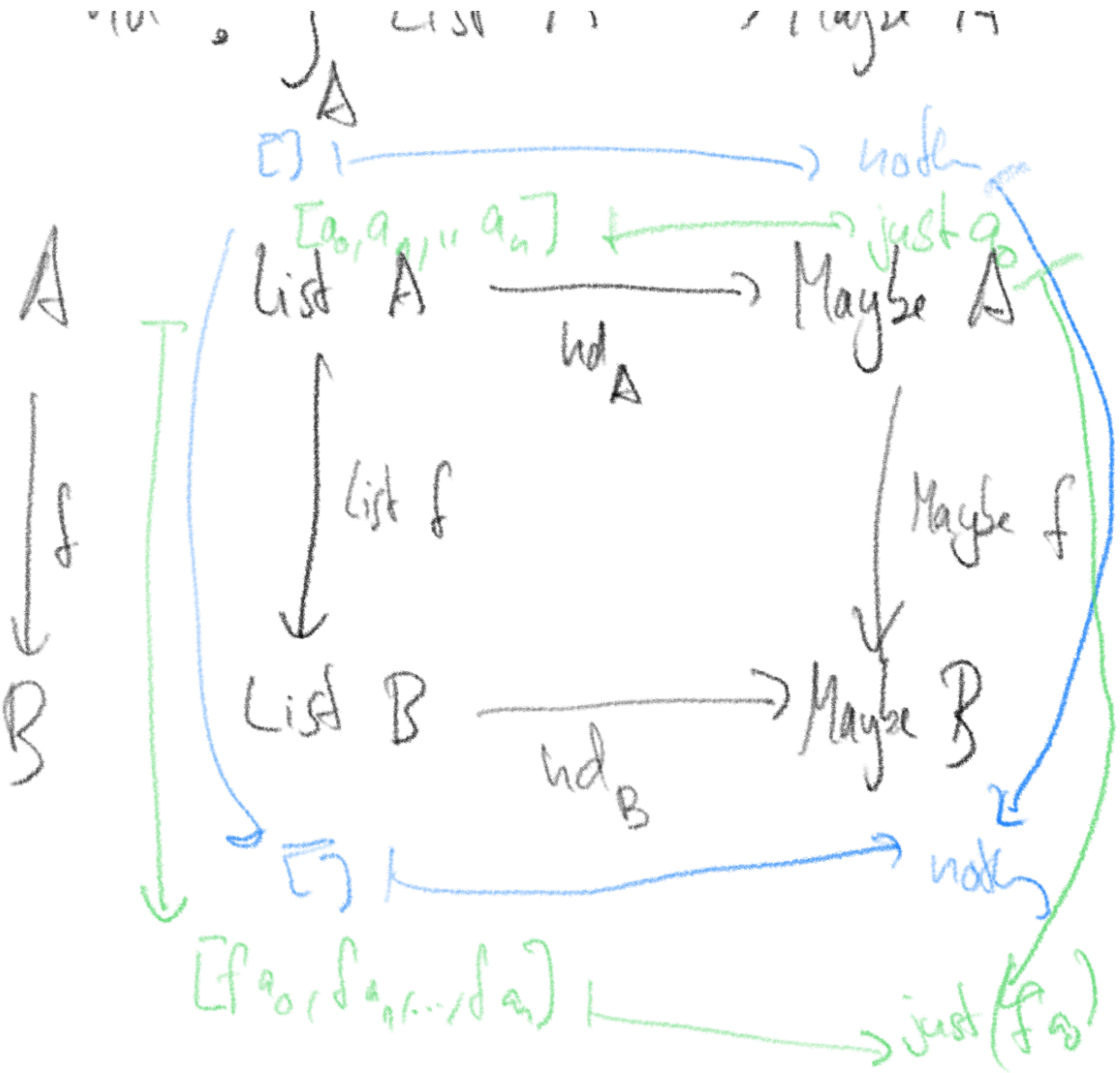
(Maybe id) nothing = nothing
= id nothing

(Maybe id) (just a) = just (id a)
= just a
= id (just a)

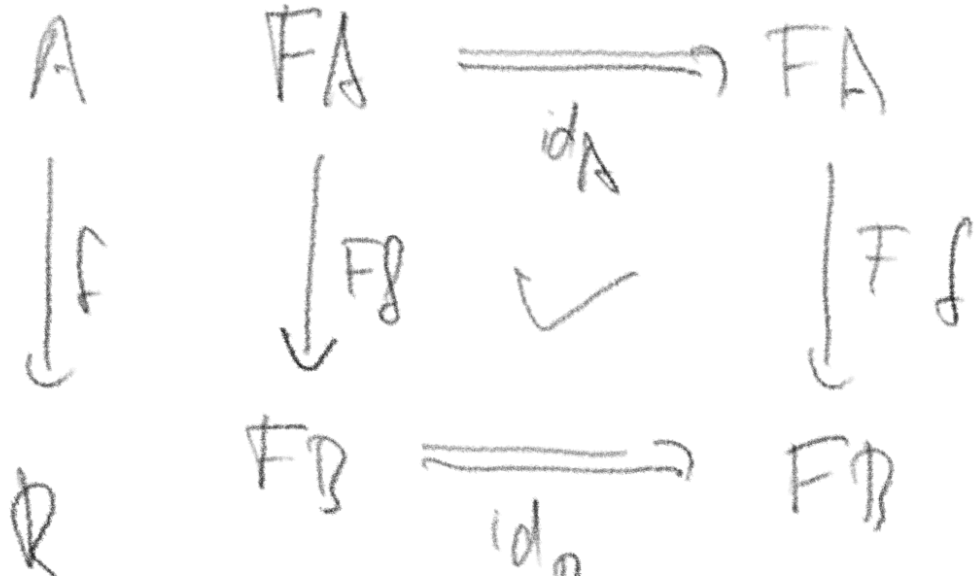
- Maybe (f ∘ g) = Maybe f ∘ Maybe g

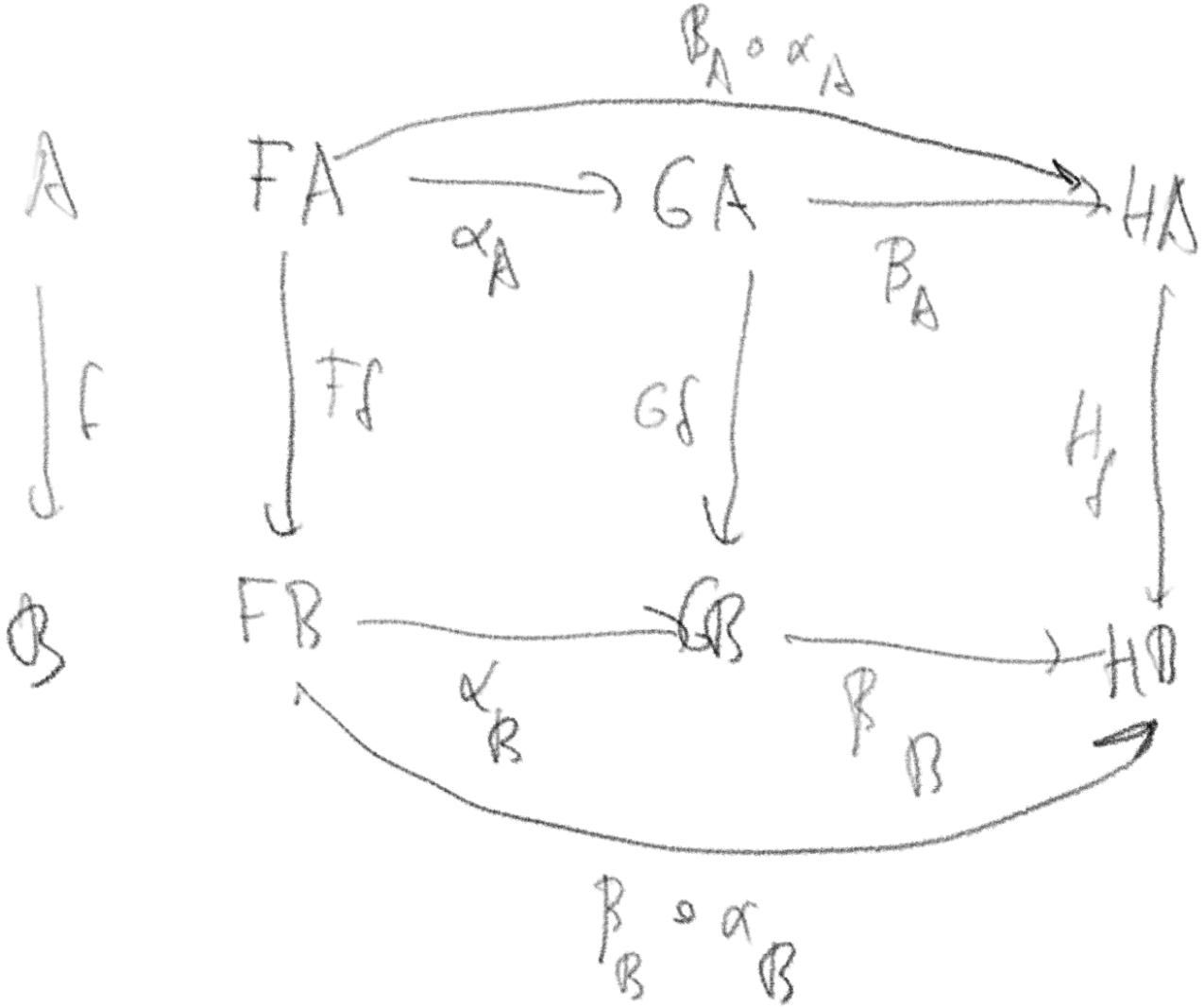
...

fmap : [] A → Maybe A


[]
nothing
[a0, a1, ... an]
just a0
A
List A
Maybe A
hd_A
f
List f
Maybe f
B
List B
Maybe B
hd_B
[]
nothing
[f a0, f a1, ... f an]
just (f a0)

Ex 15


A
FA
FA
id_A
f
Ff
Ff
B
FB
FB
id_B



pasting diagrams