Type classes

```
(+) :: Additive a    => a -> a -> a
(-) :: AddGroup a    => a -> a -> a
(*) :: Multiplicative a => a -> a -> a
(/) :: MulGroup a    => a -> a -> a
```

Type classes

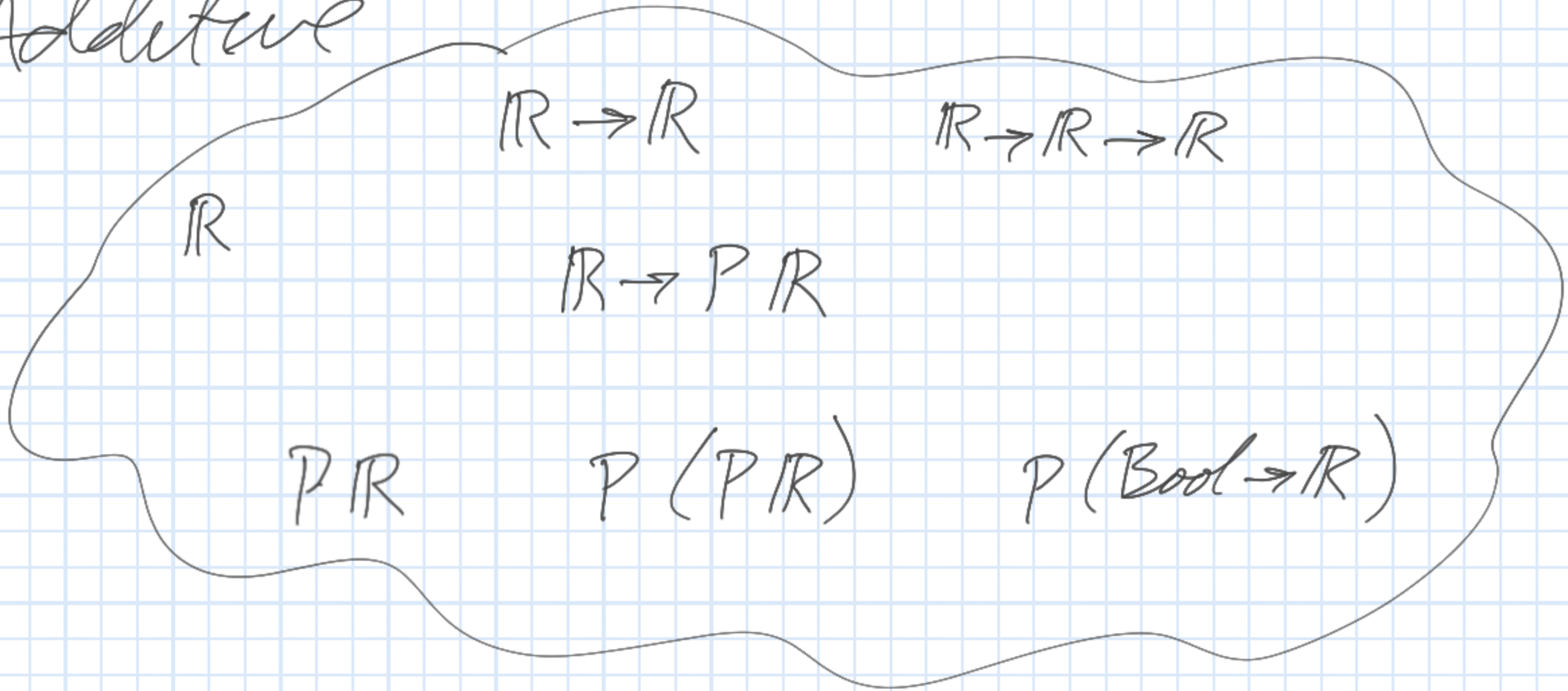
```
(+) :: Additive a => a -> a -> a
(-) :: AddGroup a => a -> a -> a
(*) :: Multiplicative a => a -> a -> a
(/) :: MulGroup a => a -> a -> a
```

Ring

Field

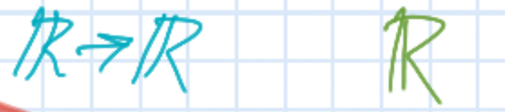
Type classes

Additive



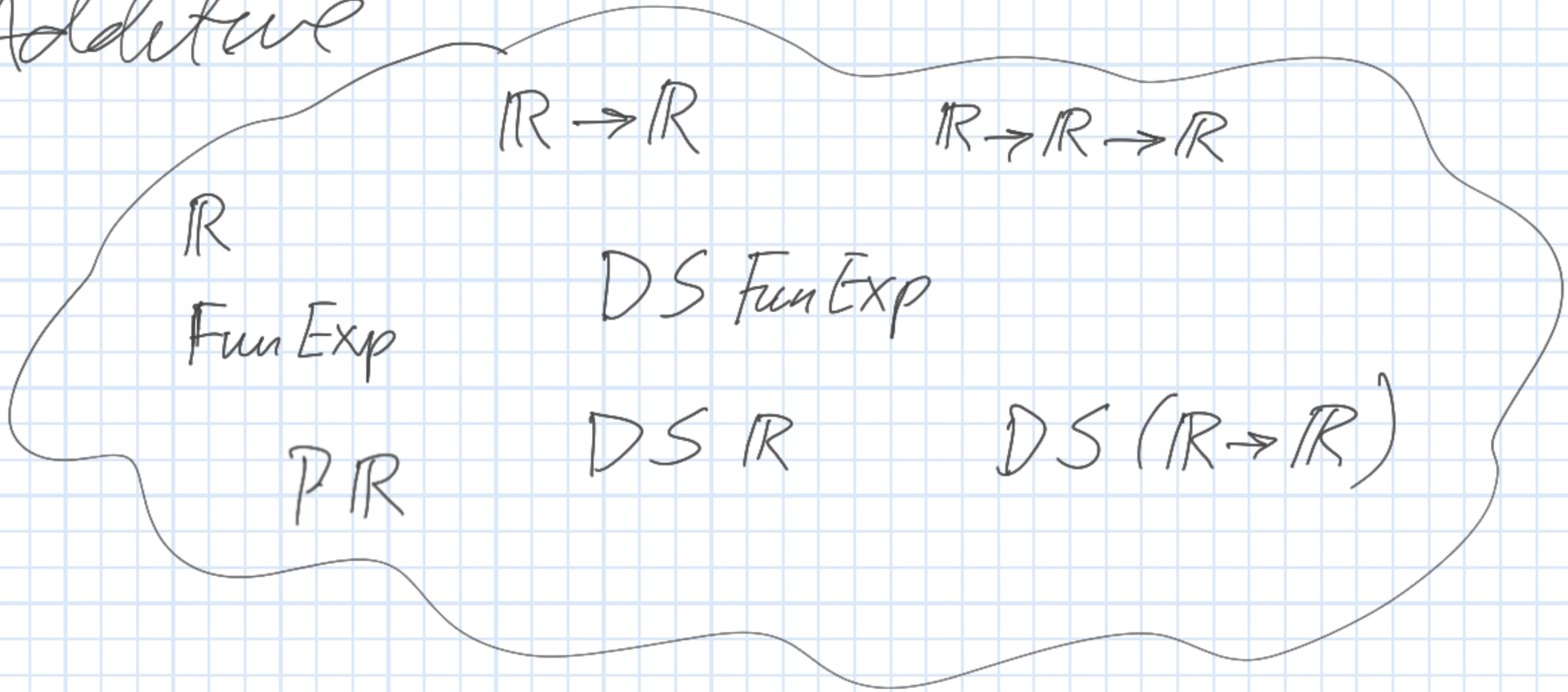
Type classes

```
mulL (a:as) ys = mulL ([a] + 0:as) ys
               = mulL [a] ys  + mulL (0:as) ys

eval (a:as) x = a + x · eval as x

= scaleL a ys
  + 0: mulL as ys
```



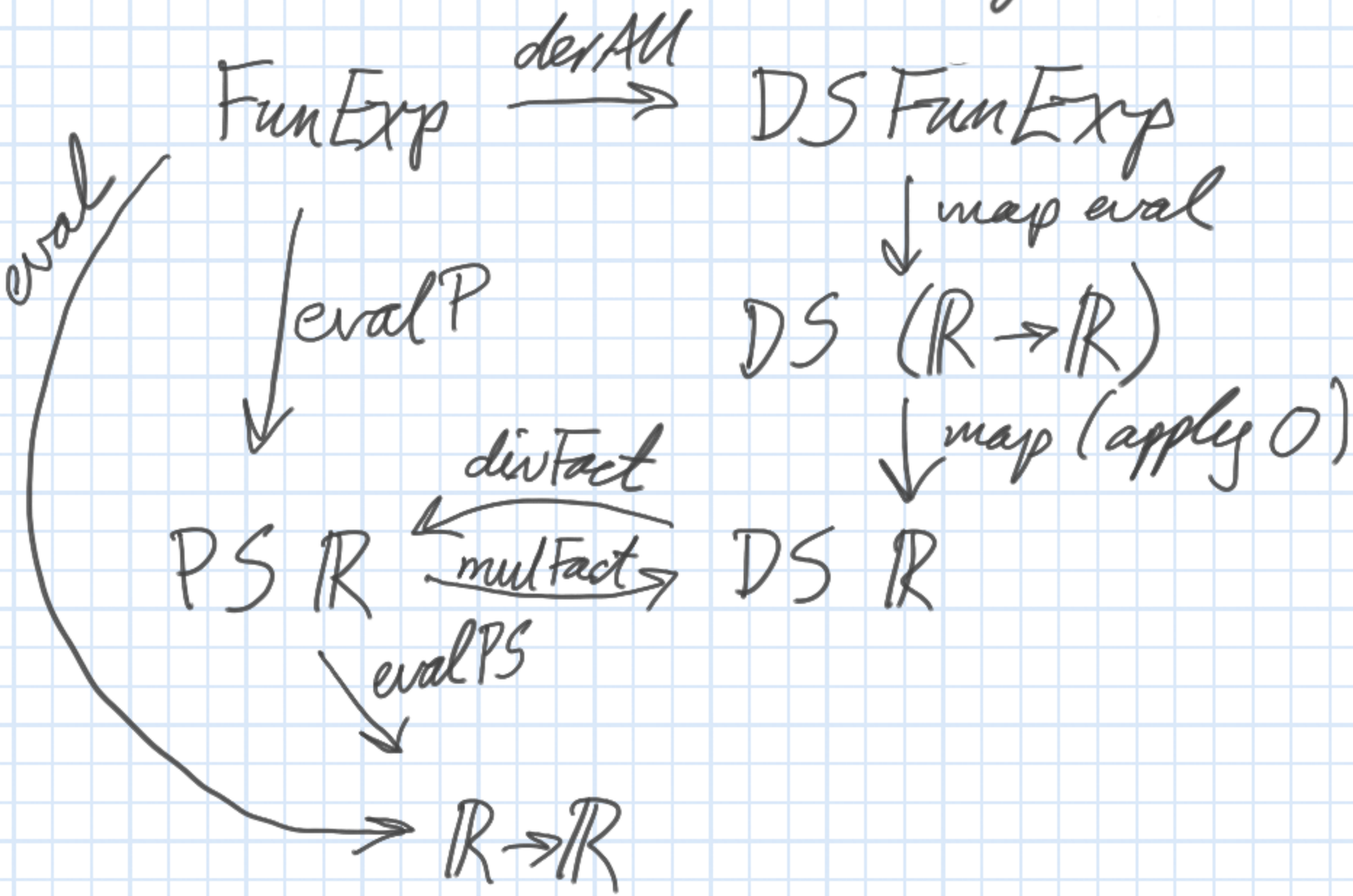
Type classes

Additive



Derivative streams & Taylor series

Patrik Jansson



DSL → δσλ
DSLsofMath

Derivative streams

Patrik Jansson

```
add, mul : DS a → DS a → DS a
mul fs@(f : fs') gs@(g : gs') = m : ms'
  where m = f * g
        ms' = add (mul fs' gs) (mul fs gs')
```

f : a

fs, fs' : DS a