

Advanced Functional Programming

Assignment 3
Pepijn Gramberg
Frank Dedden

October 14, 2014

5.2

```
class A a
class (A a) ==> B a
instance A Bool
instance B Bool
instance A a ==> A (Maybe a)
instance (A a, B a) ==> A [a]
```

$$\frac{\frac{\frac{}{c \ A \ Int \ ==> \ B \ Int}}{B \ Int \vdash A \ Int} \quad \frac{}{i \ A \ Int \ ==> \ A \ (Maybe \ Int)}}{B \ Int \vdash A \ (Maybe \ Int)} \quad \frac{}{i \ A \ (Maybe \ Int) \ ==> \ A \ (Maybe \ (Maybe \ Int))}}{B \ Int \vdash A \ (Maybe \ (Maybe \ Int))}$$

$$\frac{\frac{\frac{}{i \ B \ Bool}}{\emptyset \vdash B \ Bool} \quad \frac{}{i \ A \ Bool}}{\emptyset \vdash A \ Bool, \ B \ Bool} \quad \frac{}{i \ (A \ Bool, \ B \ Bool) \ ==> \ A \ [Bool]}}{\emptyset \vdash A \ [Bool]} \quad \frac{}{i \ A \ [Bool] \ ==> \ A \ Maybe \ ([Bool])}}{\emptyset \vdash A \ (Maybe \ [Bool])}$$