Homework 2

(return by Oct 31)

Exercise 1 *Write the expressions using λ-notations and appropriate constants.*

1.

$$\frac{d}{dx}\int_1^x dx \int_0^1 (x-y)^{\frac{1}{2}} dy$$

2.

$$\frac{d}{dx}\frac{d}{dy}F(x,y)|_{y=7}$$

Write the above expressions in notations of a conventional prog. language.

Exercise 2 *Solve type restoring problem for the following applicative terms.*

1. $(xy)z(xy)$
2. $xy(zxu)$
3. $(x+)yx+$ *(here $+$ is a function of type $int \to \int \to int$).*
4. $x\forall(xyz)$ *(here $\forall$ is a function of type $(int \to bool) \to bool$).*

Exercise 3 *Construct the parsing tree and the skeleton of the following expression:*

$$(\lambda xy.\ xyz)(\lambda x.\ m\lambda y.xmy)$$