Task 2.1

a. is a value (integer)
b. does not evaluate to a value but is well-typed and syntactically correct
c. does not evaluate to a value
d. does not evaluate to a value and it is undefined
e. not well-typed because bracket not closed
f. does not evaluate to a value and not a function
g. Evaluates to a value, value is “good”
h. Evaluates to a value, value is “good”
i. Does not evaluate to a value and not a function
j. Evaluates to a value

Task 2.2

a. They are alpha-equivalent since both expressions evaluate to 3, and renaming x to y and y to x will not change the outcome
b. They are not alpha-equivalent because the first expression evaluates to 4 because 2 + 2 = 4 and the second expression evaluates to 2 + 1 which equals 3. If y is changed to x in the 2nd expression, then the x that is already there must be changed to some other variable.
c. They are alpha-equivalent because both expressions evaluate to 5. Also, when you rename the inner x to z and the outer x to y in the first expression, it will result in the second expression, which shows that it will not change the meaning of the expression.
d. They are alpha-equivalent since both expressions evaluate to 5. Furthermore, renaming the first y to a and the 2nd y to b will end up being the second expression.
e. They are not alpha-equivalent because the first expression evaluates to 1 while the second expression evaluates to 2 since x is not overridden by y in the first expression while it is being overridden in the second expression.

Task 3.1

a. 'a * 'b -> 'b * 'a
b. 'a -> 'a list -> 'a list list
c. 'a -> 'a -> 'a list -> 'a list list
d. int -> int -> int list
e. 'a list -> 'a list list

Task 4.6

a. I spent a couple hrs over the span of a few days