

- Abstractions with Higher Order Functions

- Functions allow us to build abstractions by assigning names to common patterns and then to work in terms of the abstraction directly. Eg Square, Sqrt etc that we saw earlier.
- Functions that manipulate functions - can accept functions as argument or return function as value - are called **Higher Order Functions**
- Higher order functions serve as a powerful abstraction mechanism

- Functions as arguments

- sum_of_integers, sum_cubes, pi_sum
- $\text{pi_sum} = 1/1^3 + 1/5^7 + 1/9^{11} + \dots$
- tail call optimisation
- Function expressions (Arrow functions)

- Functions as return values

- Closures

- Higher order functions means:

- They may be referred to using names
- They may be passed as arguments to functions
- They may be returned as results of functions
- They may be included in the data structures