Anonymous Functions

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Anonymous Functions

- Functions as parameters are frequent
  - Example: Tkinter GUI associates functions to buttons
- Anonymous functions are a quick, convenient way to define simple functions just exactly once
- So that we do not need to remember them

Anonymous Functions

- Lambda expression
  - Comes from theoretical computer science
- To define a function $x, y \mapsto \dfrac{x^2 + y}{y^2 + x}$
  - `lambda x, y: (x**2+y)/(y**2+x)`
  - `lambda` — keyword
  - `x, y` — argument list
  - `(x**2+y)/(y**2+x)` — return value

Anonymous Functions

- Example:
  - Numerical differentiation test
    - `print(derivative(lambda x: x**3+x+1, 1))`
      - Exact answer is 4.0
      - Because we are differentiating $x \mapsto x^3 + x + 1$
      - `print(derivative(lambda x: x**3+x+1, 1))`

Anonymous Functions

- If we want to, we can give anonymous functions a name

```
func = lambda x: x**3+x+1
```

- Now we can call `func(1)`