Lambda expressions: what are the values of the following expressions?

\[(\lambda (x) (\ast 2 x))\]
\[((\lambda (x) (\ast 2 x)) 2)\]
\((\text{define double } (\lambda (x) (\ast 2 x)))\)
\((\text{double } 2)\)
\(\text{double}\)
\((\text{double})\)
\((\text{double } 2 4)\)
\((\text{define six } (\lambda () 6))\)
\(\text{six}\)
\((\text{six})\)

Procedures 1

-- Write a procedure called ‘‘circumference’’ which implements
circumference(x) = (2 * 3.14 * x)

-- Write a procedure called ‘‘average’’ which implements
average(x,y) = (x+y)/2

-- Write a function ‘‘abs’’ which gives
abs(x) = x if(x>0)
= -x otherwise
Factorial
======================================================================
Consider the following procedure:

```
(define fact (lambda (n)
    (if (= n 1)
        1
        (* n (fact (- n 1))))))
```

Trace the result of evaluating

```
(fact 3)
```

======================================================================
Write a function ‘’sum’’ which takes two arguments, x and y, and returns the sum of all integers between x and y.

Hint: we can write

```
sum(x,y) = 0 if (x>y)
        = x + sum(x+1, y) otherwise
```

```
(define sum (lambda (x y)

))
```

======================================================================
Write a procedure that computes the Fibonacci numbers:
the n’th number fib(n) is defined as

```
fib(n) = 0 if (n=0)
      = 1 if (n=1)
      = fib(n-1) + fib(n-2) otherwise
```

```
(define fib (lambda (n)

))
```