SRM INSTITUTE OF

SCIENCE &TECHNOLOGY

Kattankulathur

Chennai

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| Name | * **GAURAV GUPTA** |
| Subject | * Advanced Programming practice |
| Section | * W2 |
| Roll No. | * RA2211026010284 |
| Title | * Assignment   Tutorial 15 |

**Assignment**

**Tutorial 15**

**Q1) Calculate Root (2) with 100 decimal places.**

**CODE:**

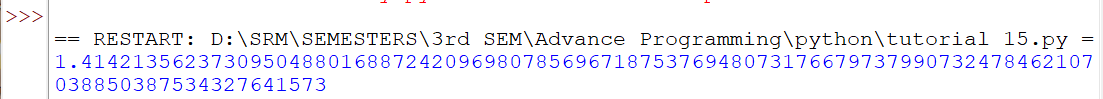
**import mpmath**

**mpmath.mp.dps = 100**

**root\_2 = mpmath.sqrt(2)**

**print(root\_2)**

**Output:**

****

**Q2) Calculate 1/2 + 1/3 in rational arithmetic.**

**CODE:**

**import sympy**

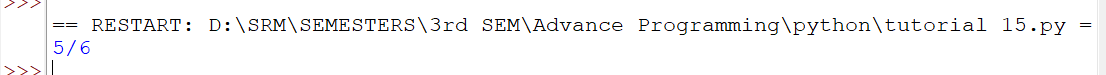
**num1 = sympy.Rational(1, 2)**

**num2 = sympy.Rational(1, 3)**

**result = num1 + num2**

**print(result)**

**Output:**

****

**Q3) Calculate the expanded form of (x+y)^6.**

**CODE:**

**import sympy as sym**

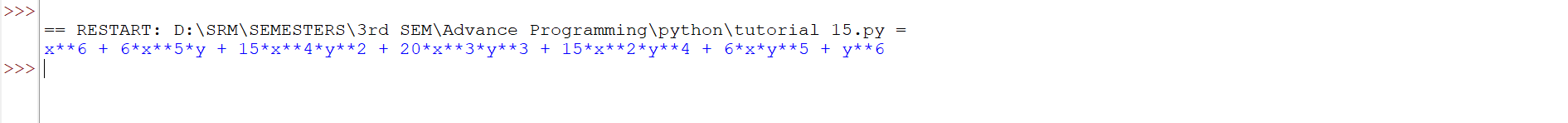
**x=sym.Symbol('x')**

**y=sym.Symbol('y')**

**exp =sym.expand((x+y)\*\*6)**

**print(exp)**

**Output:**

****

**Q4) Simplify the trigonometric expression sin(x)/cos(x).**

**CODE:**

**import sympy**

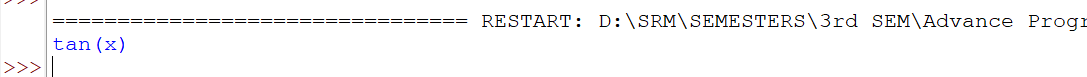
**x = sympy.symbols('x')**

**expr = sympy.sin(x) / sympy.cos(x)**

**simplified\_expr = sympy.simplify(expr)**

**print(simplified\_expr)**

**Output:**

****

**Q5) Calculate lim x- >0 {sin(x) - x) / (x\*\*3)}.**

**CODE:  
  
import sympy**

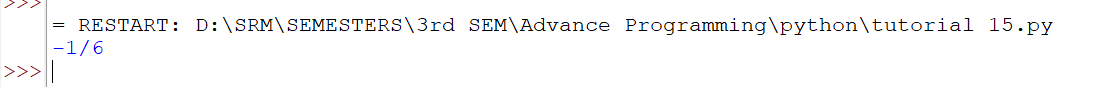
**x = sympy.symbols('x')**

**expr = (sympy.sin(x) - x) / (x\*\*3)**

**limit\_result = sympy.limit(expr, x, 0)**

**print(limit\_result)**

**Output:**

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