

Symbolic Programming Paradigm

1. Calculate $\sqrt{2}$ with 100 decimals.
2. Calculate $1/2 + 1/3$ in rational arithmetic.
3. Calculate the expanded form of $(x+y)^6$.
4. Simplify the trigonometric expression $\frac{\sin(x)}{\cos(x)}$
5. Calculate $\lim_{x \rightarrow 0} \left(\frac{\sin(x) - x}{x^3} \right)$
6. Calculate the derivative of $\log(x)$, $1/x$, $\sin(x)$, $\cos(x)$ for x .
7. Solve the system of equations $x + y = 2$, $2x + y = 0$
8. Integrate x^2 , $\sin(x)$, $\cos(x)$ in terms of x and y
9. Solve $f''(x) + 9f(x) = 1$
10. Using matrices solve the linear equations
$$\begin{aligned} 3x + 7y &= 12z \\ 4x - 2y &= 5z \end{aligned}$$