

Calculus 2 – Extra Credit using Mathematica – Prof. Richard B. Goldstein

PROBLEM	Mathematica Expression
$\lim_{x \rightarrow \infty} \left(\frac{2x-3}{2x+1} \right)^{2x+3}$	Limit[((2x-3)/(2x+1))^(2x+3),x->Infinity]
$\int \frac{dx}{\sqrt{x^2+4x+8}}$	Integrate[1/Sqrt[x^2+4x+8],x]
$\int \frac{\sqrt{x}}{\sqrt{x}-\sqrt[3]{x}} dx$	Integrate[Sqrt[x]/(Sqrt[x]-x^(1/3)),x]
$\int_0^2 \frac{dx}{\sqrt{1+x^3}}$	NIntegrate[1/Sqrt[1+x^3],{x,0,2}]
$\int 6x^2 e^{x^3} dx$	Integrate[6x^2Exp[x^3],x]
Taylor-Maclurin Series expansion of $\ln(e^{-x} + x^2)$	Series[Log[Exp[-x]+x^2],{x,0,9}]
Find the length of $y = x\sqrt[3]{4-x}$ for $0 \leq x \leq 4$	NIntegrate[Sqrt[(1+D[x(4-x)^(1/3)]^2)],{x,0,4}]
Graph curves defined by parametric equations $x = \cos t, y = \sin(t + \sin 5t)$	ParametricPlot[{Cos[t],Sin[t+Sin[5t]]},{t,-Pi,Pi}]