

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

Problem	Mathematica Expression
$\lim_{x \rightarrow 2} \frac{x^3 - 8}{x - 2}$	Limit[(x^3-8)/(x-2),x->2]
$\lim_{x \rightarrow 0} \frac{\sqrt{9+7x} - \sqrt{9-5x}}{x}$	Limit[(Sqrt[9+7x]-Sqrt[9-5x])/x,x->0]
$\frac{d}{dx} \frac{x^2 - x}{\sqrt{x^2 + 1}}$	D[(x^2-x)/Sqrt[x^2+1],x]
$\frac{d}{dx} x^2 \ln(x^3 + 1)$	D[x^2Log[x^3+1],x]
$\int 6x^2 e^{x^3} dx$	Integrate[6x^2Exp[x^3],x]
$\int_0^3 \frac{6t}{\sqrt{t^3+9}} dt$	NIntegrate[6t/Sqrt[t^3+9],{t,0,3}]
Graph $x^3 - 9x^2 + 7x + 10$	Plot[x^3-9x^2+7x+10,{x,-5,10}]
Graph $\frac{4x^3}{(x-2)^2(x+1)}$	Plot[4x^3/((x-2)^2(x+1)),{x,-3,4},PlotRange->{-200,200}]
Find the implicit derivative of $y^3 + y^2 - 5y - x^2 + 4 = 0$ at the point (1, -3)	-D[y^3+y^2-5y-x^2+4,x]/D[y^3+y^2-5y-x^2+4,y].{x->1,y->-3}