= =1.65cm =5.5pt
I have not violated the Honor Code in any way with regard to this work.

Math 105–Test III April 12, 1994 =2
=1
The slope of the curve $x^3 + y^3 = 9xy$ at $(2,4)$ is
$\frac{4}{5}$ 3 -4 $-\frac{2}{5}$ $\frac{5}{3}$
Let $f(x) = \sqrt{x+1}\ln(x+1)$. Then $f'(x) =$
$\frac{2+\ln(x+1)}{2\sqrt{x+1}}$ $\frac{1}{\sqrt{x+1}}$ $\frac{\ln(x+1)}{2\sqrt{x+1}} + \frac{\sqrt{(x+1)}}{\ln(x+1)}$ $\frac{\ln(x+1)}{\sqrt{x+1}} - \frac{1}{\sqrt{x+1}}$ $\frac{1}{2\sqrt{x+1}}\frac{1}{x+1}$
The solution of the differential equation $y' + y = 0, y(0) = 1$ is
$y = e^{-x}$ $y = e^{-x} + e^x$ $y = e^x$ $y = 2e^{-x}$ $y = 1$
Find x such that $\ln 10^x = 10x$
$x = 0$ $x = 1$ $x = \ln 10$ $x = e$ $x = 10$
The solution of the equation $e^{x^2-x} = e^2$ is
$x = 2$ or $x = -1$ $x = -2$ $x = 0$ $x = 1$ or $x = -2$ no solution
The derivative of $y = (xe^x + 1)^{-1}$ is
$-(xe^x+1)^{-2}(e^x+xe^x)$ $-(xe^x+1)^{-2}+(e^x+xe^x)$ $(xe^x+1)^{-1}(e^x+xe^x)$ $-(e^x+xe^x)-2$ $-(xe^x+1)^{-2}$
The function $y = (4x-1)e^{3x-2}$ has one relative extremum point. This point is a
minimum at $x = -\frac{1}{12}$ minimum at $x = \frac{1}{4}$ maximum at $x = -\frac{1}{12}$ maximum at $x = \frac{1}{4}$ minimum at $x = \frac{2}{3}$
Solve the equation $\ln\big(\ln(x+1)\big) = 1$
$x = e^e - 1$ $x = e - 1$ $x = e^{e-1}$ $x = 0$ no solution
The equation of the tangent line to the graph of $y = \ln(x^2+1)$ at $x = 0$ is
$y = 0$ $y = x + 1$ $x = -1$ $y = -1$ $y = 2x$
Use logarithmic differentiation to find the derivative of $f(x) = (x+1)^{(x+1)}$.
$\big[\ln(x+1) + 1\big](x+1)^{(x+1)}$ $(x+1)(x+1)^x$ $(x+1)\ln(x+1)$ $\frac{1}{x+1}\ln(x+1)$ $(x+1)\big[\ln(x+1)+1\big]$
From 1990 to 1993 the population of a town grew exponentially from 8000 to 16000. How large will the population be in the year 1996?
$8000e^{2\ln 2}$ 16000 $\frac{e^{2\ln 2}}{8000}$ $32000e^{\ln 2}$ $8000e^{\ln 2}$
The half life of an radioactive element is 3 days. Its decay constant is (assume $\ln 2 = 0.69$)
$\lambda = 0.23$ $\lambda = 0.069$ $\lambda = 0.0.023$ $\lambda = 0.69$ $\lambda = 0.023$
$\frac{d}{dx}[x^2 \ln\sqrt{x}] =$
$x\ln x + \frac{x}{2}$ $2x\ln\sqrt{x}$ $2x\frac{1}{\sqrt{x}}$ $2x\frac{1}{\ln\sqrt{x}}$ $2x\ln\frac{1}{2\sqrt{x}}$
$\frac{d}{dx}[(x+1)^2 e^{x^3-2}] =$
$2(x+1)e^{x^3-2}+3x^2(x+1)^2e^{x^3-2}$ $2(x+1)e^{x^3-2}+(x+1)^2e^{x^3-2}$ $2(x+1)+e^{3x^2}$ $2(x+1)e^{3x^2}$ $2(x+1)+3x^2e^{x^3-2}$
If \$50 is deposited in an account with 10% compounded continuously, how much money will be in the account after 10 years? (assume e=2.7)

135 125 75 155 100

If $f(x)=\ln[(x^2+1)^{-3}(x^3-1)^4]$, then $f'(x)$ is

$-\frac{6x}{x^2+1}+\frac{12x^2}{x^3-1}$ $-3\ln(x^2+1)^{-4}+4\ln(x^3-1)$ $-6x\ln(x^2+1)^{-3}+12x^2\ln(x^3-1)^4$ $\frac{1}{(x^2+1)^3(x^3-1)^4}$ $\frac{6x}{x^2+1}-12x^2(x^3-1)$ $\frac{d}{dx}[x^{e+\ln 2}]=$

$(e+\ln 2)x^{e+\ln 2-1}$ $(e+\ln 2)x^{e+\ln 2}$ $x^{e+\ln 2}$ $\frac{1}{e+\ln 2}x^{e+\ln 2}$ $ex^{e-1}+\ln 2x^{\ln 2-1}$

$e^{2\ln x^3-\ln 4+\ln x}=$

$\frac{x^7}{4}$ $\frac{x^4}{2}$ $2x^3-4+x$ $\frac{2}{x^3}-\frac{1}{4}+\frac{1}{x}$ $-\frac{1}{2x^4}$

The derivative of $f(x)=\ln(1+e^x)^2$ is

$\frac{2e^x}{1+e^x}$ 2 $\frac{e^x}{(1+e^x)^2}$ $2e^x\ln(1+e^x)$ $2(1+e^x)\ln(1+e^x)$

If $x^{\frac{2}{3}}+y^{\frac{2}{3}}=8$, then $y'=$

$-\left(\frac{y}{x}\right)^{\frac{1}{3}}$ $-y^{-\frac{1}{3}}-x^{-\frac{1}{3}}$ $\left(\frac{x}{y}\right)^{\frac{1}{3}}$ $y^{\frac{1}{3}}+x^{\frac{1}{3}}$ $y^{\frac{1}{3}}-x^{\frac{1}{3}}$