Math 026L.01 Spring 2000
Differentiation Gateway

Note that there are problems on both the front and back of this page. Please circle or otherwise indicate your final answers. You must get seven of the eight problems completely correct to pass, so be sure to check your answers a couple of times. Good luck!

1. $\dfrac{d}{dx}\left(x^{\pi} - \pi^{x} + e^{x} - e^{\pi}\right)$

2. $\dfrac{d}{dx}\left(\dfrac{x + \sqrt{x}}{e^{x} - x}\right)$

3. $\dfrac{d}{dx}\ln\left(\dfrac{x^{2}e^{x}}{e^{x} - 1}\right)$

4. $\dfrac{d}{dx}\left(\sqrt[3]{x} + \dfrac{3}{\sqrt[3]{x}}\right)$

5. $\dfrac{d}{dx}\left[e^{x^2}\ln\left(x^2+1\right)\left(3^x-4\right)\right]$

6. Find $\dfrac{dy}{dx}$ if $x^3+\frac{4}{3}y^3-x^2y=8$.

7. $\dfrac{d}{dx}\left(9x^2+16^x\right)^{\frac{1}{2}}$

8. $\dfrac{d}{dx}\,e^x\ln x$