Worksheet on Logarithmic Differentiation

Math 1a: Introduction to Calculus

21 March 2005

For each of the following, differentiate the function first using any rule you want, then using logarithmic differentiation:

1. $y = x^2$

2. $y = e^x$

3. $y = \sqrt{x^2 + 1}$

4. $y = x \sin x$

5. $y = \frac{x}{x^2+2}$

6. $y = \sqrt{(x^2 + 1)(x - 1)^2}$.

Use logarithmic differentiation to find the following derivatives:

7. $y = (x + 1)^x$

8. $y = x^{x+1}$

9. $y = (\sqrt{x})^x$

10. $y = x^{\sqrt{x}}$