## AP Calculus

## 3.9 Worksheet

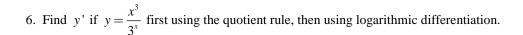
All work must be shown in this course for full credit. Unsupported answers may receive NO credit.

1. Suppose  $10 = e^{xy} + x^2 + y^2$ , find  $\frac{dy}{dx}$ .

- 2. Find g'(t) if  $g(t) = t^e(e^{-t})$
- 3. Find g'(t) if  $g(t) = \ln(\ln t)$ .

4. Use properties of logarithms to rewrite h(x) and then find h'(x) if  $h(x) = \ln\left(\frac{1+e^x}{1-e^x}\right)$ .

5. Find the first derivative for  $y = x^{\ln x}$  (use logarithmic differentiation).



- 7. Solve the following without using a calculator: If  $f(x) = (x^2 + 1)^{(2-3x)}$ , then f'(1) =
- A  $-\frac{1}{2}\ln(8e)$  B  $-\ln(8e)$  C  $-\frac{3}{2}\ln(2)$  D  $-\frac{1}{2}$

- $E_{\frac{1}{8}}$

- 8. If  $y = \tan u$ ,  $u = v \frac{1}{v}$ , and  $v = \ln x$ , what is the value of  $\frac{dy}{dx}$  at x = e?
- A 0

- $\mathbf{B} = \frac{1}{e}$
- C 1

- D  $\frac{2}{e}$  E  $\sec^2(e)$

9. Complete the following questions from the textbook: page 178 – 179 #1, 4, 5, 7, 8, 11, 12, 13, 16, 17, 21, 22, 26, 29, 30, 33, 37, 40, 41, 45