

MATH 161 EXAM 2, Spring 2006

Simplify all answers. Show your work!		Name:	Score
1.	Differentiate the function: a) $y = \sqrt{2x} + \sqrt{3x}$ Ans:_____	b) $y = (x^3 - 9)^4$ Ans:_____	1
			2
			3
			4
			5
			6
			7
2.	Differentiate the function: a) $f(t) = (t^2 - 1)e^t$ Ans:_____	b) $y = \sin(1/x)$ Ans:_____	8
			9
			10
			Tot
3.	Differentiate the function: a) $y = \sin e^{3x}$. Ans:_____	b) $y = \frac{e^x + 1}{e^x - 1}$. Ans:_____	
4.	The position of a particle is given by $s(t) = t^3 - 4.5t^2 - 7t$. Find: a) The velocity. Ans:_____	b) The time it takes to reach a velocity of 5 m/s. Ans:_____	
5.	Use analytic methods to find the limits: a) $\lim_{x \rightarrow 0} \frac{\cos 5x - 1}{6x}$. Ans:_____	b) $\lim_{x \rightarrow 0} \frac{4 \sin x}{7 \sin 3x}$. Ans:_____	
6.	Differentiate the function: a) $y = \tan^3(2x)$. Ans:_____	b) $y = \ln(e^x + 1)$. Ans:_____	

7. Use implicit differentiation to find y' .
 $xy^3 - x^2 + 2y = 7.$

Ans: _____.

8. Use logarithmic differentiation to find y' :
a) $y = 2^{x^2}.$

Ans: _____.

b) $y = x^{\sin x}.$

Ans: _____.

9. Differentiate the function:
a) $y = 4 \tan^{-1}(e^x).$

Ans: _____.

b) $y = \tanh^{-1}(x^2).$

Ans: _____.

10. Let $y = f(x)$ be defined implicitly by the equation $x^2 - y^4 = 3.$
a) Find $dy.$

Ans: _____.

- b) Find the linearization of $f(x)$ at $(2, 1).$

Ans: _____.

Extra space