

BREAKDOWN OF CALCULUS BC TEST 1-3
100 PTS NON-CALCULATOR
MONDAY, OCTOBER 1

Review: Page 393: 7-13 all, 23-45 odd, 59-63 odd, WKST on Inverses, Given Notes and examples

Part I: Short Answer [50 pts × 1]

	Total Amount	Total Points
§5.1: Natural Log Differentiation	2 questions	6 points
<ul style="list-style-type: none"> • Taking the derivative of a Natural Logarithm function and Trig function 		
Examples: Page 393: 7-13 all, 8) $y' = \frac{2(3x+1)}{x(3x+2)}$, 10) $y' = \frac{3}{x}(\ln x)^2$, 12) $y' = \frac{6}{x(6-x)}$		
§5.4: Natural Log and Log Differentiation	4 questions	16 points
<ul style="list-style-type: none"> • Taking the derivative of a Natural Logarithm function and Trig function • Using the derivative to find the equation of a tangent line using 		
Examples: Page 393: 39, 41, 63 and review old trig derivatives		
§5.5: Exponent Logarithm Derivatives	3 questions	12 points
<ul style="list-style-type: none"> • Applying the Product, Quotient, and Chain Rule with the given rules with exponential and logarithmic functions 		
Examples: Page 393: 37, 59, 61		
§5.3: Derivative of Inverse Functions	4 questions	16 points
<ul style="list-style-type: none"> • Taking the inverse of a function • Understanding the graphing of a function; Definition of Monotonic, One-to-one, and Inverse 		
Examples: Page 393: 29-32; 30) 1/3, 32) -1		

Part II: Multiple Choice [12 pts × 1.389]

	Total Amount	Total Points
§5.1: Natural Logarithms	1 question	3 points
§5.3: Inverse Functions	1 question	3 points
§5.4: Natural Log and Logarithmic Derivatives	1 question	3 points
§5.5: Exponent Logarithm Derivatives	1 question	3 points

Spiral Review [9 pts × 1.389]

	Total Amount	Total Points
Chapter 1 – Continuity through Piecewise	1 question	3 points
Chapter 2 – Derivatives	1 question	3 points
Chapter 5 – Alternative Form using Natural Logs	1 question	3 points

5. Let f be the function defined by the following.

$$f(x) = \begin{cases} \sin x, & x < 0 \\ x^2, & 0 \leq x < 1 \\ 2-x, & 1 \leq x < 2 \\ x-3, & x \geq 2 \end{cases}$$

For what values of x is f NOT continuous?

- (A) 0 only (B) 1 only (C) 2 only
(D) 0 and 2 only (E) 0, 1, and 2

10. An equation of the line tangent to the graph of $y = \cos(2x)$ at $x = \frac{\pi}{4}$ is

- (A) $y-1 = -\left(x - \frac{\pi}{4}\right)$
(B) $y-1 = -2\left(x - \frac{\pi}{4}\right)$
(C) $y = 2\left(x - \frac{\pi}{4}\right)$
(D) $y = -\left(x - \frac{\pi}{4}\right)$
(E) $y = -2\left(x - \frac{\pi}{4}\right)$

15. If $f(x) = (\ln x)^2$, then $f''(\sqrt{e}) =$

- (A) $\frac{1}{e}$ (B) $\frac{2}{e}$ (C) $\frac{1}{2\sqrt{e}}$ (D) $\frac{1}{\sqrt{e}}$ (E) $\frac{2}{\sqrt{e}}$

Key: 5) C, 10) E, 15) A

Part III: Free Response Question [6 pts \times 4.1667]

§5.4: Natural Base Derivatives using Implicit Differentiation

§5.4: Natural Base Application

Total Amount

1 question

1 question

Total Points

4 points

2 points