

**BREAKDOWN OF CALCULUS AB TEST 2-4**  
**100 PTS NON-CALCULATOR**  
**THURSDAY, DECEMBER 13**

**Review:** Page 312: 1-12 all, 27-31 odd, 39-42 all, 63-72 all

<b>Part I: Short Answer [50 pts × 1]</b>	<b>Total Amount</b>	<b>Total Points</b>
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§3.7: Optimization	3 questions	25 points
<ul style="list-style-type: none"> <li>• Solve for two numbers that produce a minimum</li> <li>• Solve for the area that maximize equal partitions of a building</li> <li>• Identify and prove margins that produce a minimum</li> </ul>		

Examples: Review old Worksheet

§4.2: Riemann's Sum	5 questions	17 points
<ul style="list-style-type: none"> <li>• Identify Riemann's Sum using Left, Right, Midpoint and Trapezoidal Sum using a definite integral equation</li> <li>• Graph a Riemann's Sum and Identify whether <math>f</math> is an underestimation or overestimation</li> </ul>		

Examples: Review old Worksheet, Page 312: 27-31 odd

§4.3: Special Definite Integration	4 questions	8 points
<ul style="list-style-type: none"> <li>• Use the given information to solve the definite integral (substitution)</li> <li>• Understand what happens when a function's integral limits flip, the same, split, etc...</li> </ul>		

Examples: Page 317: 41, 42; KEY: 42a) 3, b) 1, c) 0, d) 10

<b>Part II: Multiple Choice [12 pts × 1]</b>	<b>Total Amount</b>	<b>Total Points</b>
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§4.3: Special Definite Integration	1 question	3 points
§4.2: Area under the curve	1 question	3 points
§3.7: Optimization	1 question	3 points
§4.2A: Riemann's Sum Expansion	1 question	3 points

Examples: Page 317: 39 and 40. KEY: 40)  $8\pi$  units<sup>2</sup>

<b>Spiral Review [8 pts]</b>	<b>Total Amount</b>	<b>Total Points</b>
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1) Chapter 3: Position, Velocity, and Acceleration	1 question	2 points
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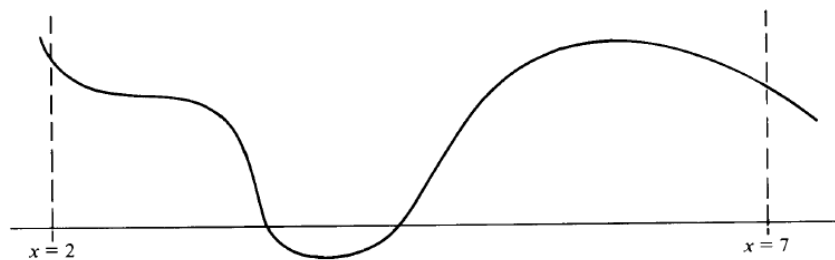
. A particle moves along the  $x$ -axis so that at any time  $t \geq 0$  its velocity is given by  $v(t) = t^2 \ln(t + 2)$ . What is the acceleration of the particle at time  $t = 6$  ?

- (A) 1.500      (B) 20.453      (C) 29.453      (D) 74.860      (E) 133.417

## 2) Chapter 3: Point of Inflection

1 question

1.75 points



The graph of  $y = f(x)$  on the closed interval  $[2, 7]$  is shown above. How many points of inflection does this graph have on this interval?

- (A) One      (B) Two      (C) Three      (D) Four      (E) Five

## 3) Chapter 3: Absolute Maxima

1 question

2 points

If  $f(x) = \frac{1}{3}x^3 - 4x^2 + 12x - 5$  and the domain is the set of all  $x$  such that  $0 \leq x \leq 9$ , then the absolute maximum value of the function  $f$  occurs when  $x$  is

- (A) 0      (B) 2      (C) 4      (D) 6      (E) 9

## 4) Implicit

The slope of the line tangent to the curve  $y^2 + (xy + 1)^3 = 0$  at  $(2, -1)$  is

- (A)  $-\frac{3}{2}$       (B)  $-\frac{3}{4}$       (C) 0      (D)  $\frac{3}{4}$       (E)  $\frac{3}{2}$

1) C, 2) C, 3) E, 4) D

**Part III: Free Response Question [9 pts × 2.778]****Total Amount****Total Points**

§4.2: Riemann's Sum

1 question

9 points

- Identify a certain sum using an UNEVEN table and explain the meaning of the answer
- Identify the rate of change of given two points
- Solve using differentiation