2007 AP® CALCULUS AB FREE-RESPONSE QUESTIONS

х	f(x)	f'(x)	g(x)	g'(x)
1	6	4	2	5
2	9	2	3	1
3	10	-4	4	2
4	-1	3	6	7

- 3. The functions f and g are differentiable for all real numbers, and g is strictly increasing. The table above gives values of the functions and their first derivatives at selected values of x. The function h is given by h(x) = f(g(x)) 6.
 - (a) Explain why there must be a value r for 1 < r < 3 such that h(r) = -5.
 - (b) Explain why there must be a value c for 1 < c < 3 such that h'(c) = -5.
 - (c) Let w be the function given by $w(x) = \int_1^{g(x)} f(t) dt$. Find the value of w'(3).
 - (d) If g^{-1} is the inverse function of g, write an equation for the line tangent to the graph of $y = g^{-1}(x)$ at x = 2.

WRITE ALL WORK IN THE PINK EXAM BOOKLET.

END OF PART A OF SECTION II

© 2007 The College Board. All rights reserved.

Visit apcentral.collegeboard.com (for AP professionals) and www.collegeboard.com/apstudents (for students and parents).