

1998 AP Calculus AB Free-Response Questions

CALCULUS AB

Section II

Time—1 hour and 30 minutes

Number of problems—6

Percent of total grade—50

A GRAPHING CALCULATOR IS REQUIRED FOR SOME PROBLEMS OR PARTS OF PROBLEMS ON THIS SECTION OF THE EXAMINATION.

REMEMBER TO SHOW YOUR SETUPS AS DESCRIBED IN THE GENERAL INSTRUCTIONS.

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1. Let R be the region bounded by the x -axis, the graph of $y = \sqrt{x}$, and the line $x = 4$.
- (a) Find the area of the region R .
 - (b) Find the value of h such that the vertical line $x = h$ divides the region R into two regions of equal area.
 - (c) Find the volume of the solid generated when R is revolved about the x -axis.
 - (d) The vertical line $x = k$ divides the region R into two regions such that when these two regions are revolved about the x -axis, they generate solids with equal volumes. Find the value of k .
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