



AP[®] Calculus AB 2001 Sample Student Responses

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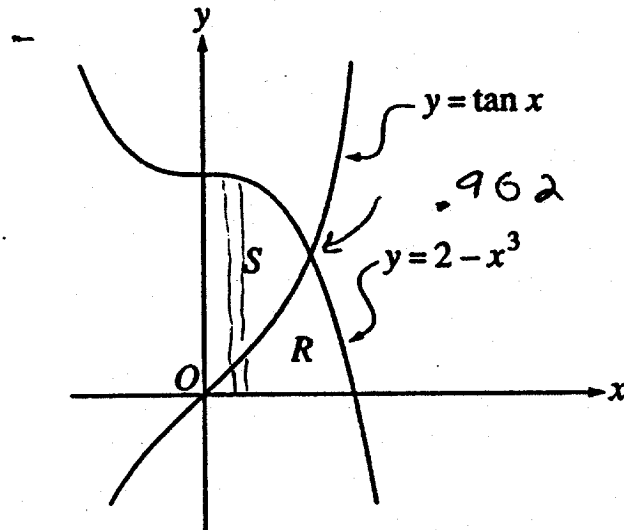
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CALCULUS AB
SECTION II, Part A

Time—45 minutes

Number of problems—3

A graphing calculator is required for some problems or parts of problems.



$$3\sqrt[3]{2-y} \quad (-.902, 1.266)$$

Work for problem 1(a)

Area of R: $\int_{\text{bottom}}^{\text{top}} [\text{Right}(y) - \text{Left}(y)] dy$

$$\int_0^{1.266} [3\sqrt[3]{2-y} - \tan^{-1}y] dy$$

Area of R = .729

$$\tan x + x^3 = 2$$

$$x = .902$$

Work for problem 1(b)

Area of S : $\int_{\text{left}}^{\text{right}} [\text{top}(x) - \text{bottom}(x)] dx$

$$\int_0^{.902} [(2-x^3) - \tan x] dx$$

$$\text{Area of } S = 1.161$$

Work for problem 1(c)

Volume of S about the x -axis:

$$\pi \int R(x)^2 dx$$

$$\pi \int_0^{.902} [(2-x^3)^2 - \tan^2 x] dx$$

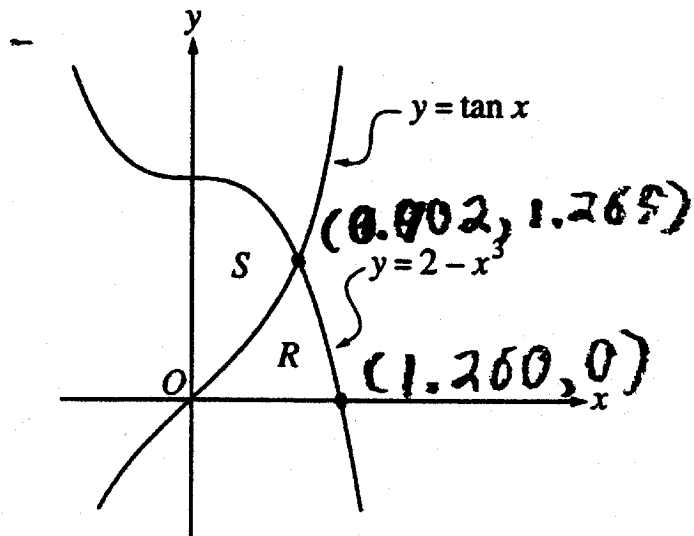
$$\text{Volume of } S \text{ about the } x\text{-axis} = 8.332$$

CALCULUS AB
SECTION II, Part A

Time—45 minutes

Number of problems—3

A graphing calculator is required for some problems or parts of problems.



Work for problem 1(a)

$$A_2 = \int_0^{0.902} \tan x \, dx + \int_{0.902}^{1.260} (2 - x^3) \, dx =$$

$$0.478 + 0.251 = 0.729$$

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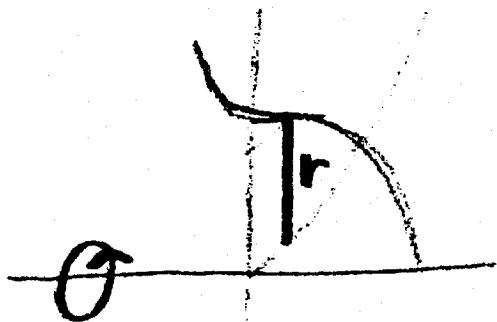
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Work for problem 1(b)

$$A_s = \int_0^{0.902} (2 - x^3) - \tan x \, dx$$

$$A_s = 1.160$$

Work for problem 1(c)



$$V = \int_0^{0.902} \pi ((2 - x^3) - \tan x)^2 \, dx$$

$$V = 5.555$$