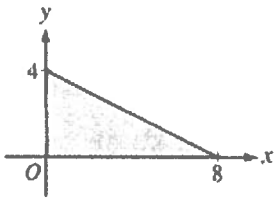
APCalc N08 AP-Style Questions KEY For details, see Google Classroom solutions for 1998 exam.

1998 Practice Exam (No Calculator)

25. What is the area of the region between the graphs of $y = x^2$ and $y = -x$ from $x = 0$ to $x = 2$?

(A) $\frac{2}{3}$ (B) $\frac{8}{3}$ (C) 4 (D) $\frac{14}{3}$ (E) $\frac{16}{3}$

1998 Practice Exam (Calculator OK)



86. The base of a solid is a region in the first quadrant bounded by the x-axis, the y-axis, and the line $x + 2y = 8$, as shown in the figure above. If cross sections of the solid perpendicular to the x-axis are semicircles, what is the volume of the solid?

(A) 12.566 (B) 14.661 (C) 16.755 (D) 67.021 (E) 134.041

1998 Practice Exam

(Calculator OK)

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. $A = \int_0^4 \sqrt{x}\,dx = \frac{16}{3}$ or 5.333

(b) Find the value of h such that the vertical line $x = h$ divides the region R into two regions of equal area. $\int_0^h \sqrt{x}\,dx = 8/3$ So, $h = \sqrt[3]{16} \approx 2.520 \approx 2.519$

(c) Find the volume of the solid generated when R is revolved about the x-axis. $V = \pi \int_0^4 (\sqrt{x})^2\,dx = 8\pi \approx 25.133 \approx 25.132$

(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.

$$\pi \int_0^k (\sqrt{x})^2\,dx = 4\pi$$

$$K = \sqrt{8} \approx 2.828$$