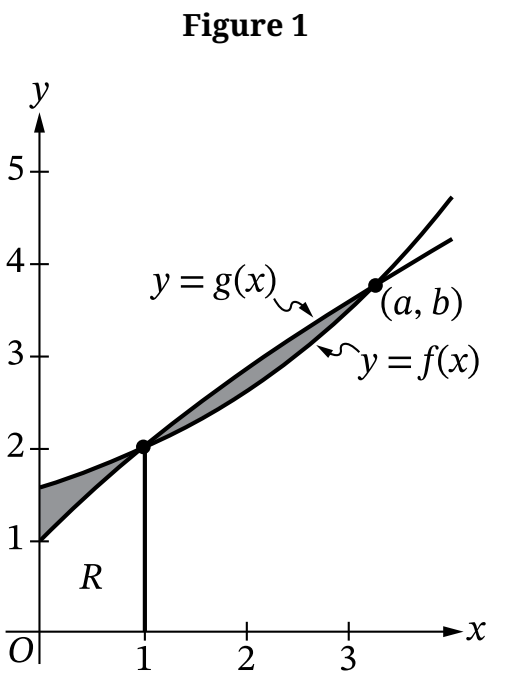
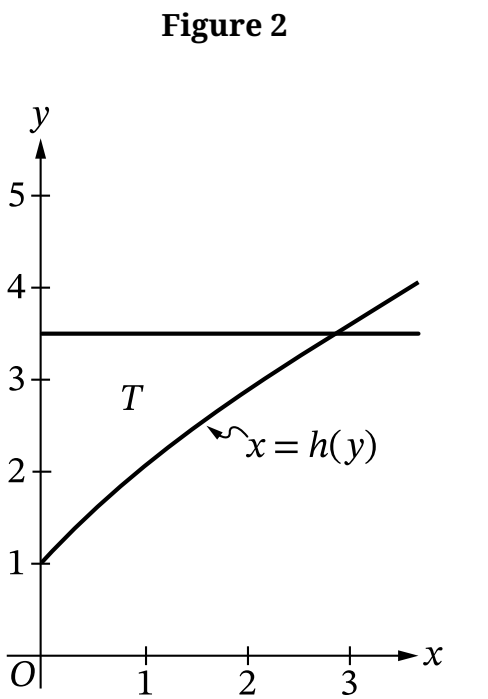


2. The function f is defined by $f(x) = 1.43^x + 0.57$, and the function g is defined by $g(x) = \frac{14x + 12}{x + 12}$. The graphs of f and g intersect at the points $(1, 2)$ and (a, b) , as shown in Figure 1.



For $x \geq 0$, the equation $y = g(x)$ can be rewritten as $x = h(y) = \frac{12y - 12}{14 - y}$, where h is a function of y . The graph of $x = h(y)$ and the horizontal line $y = 3.5$ are shown in Figure 2.



- Part A**
- Let R be the region bounded by the graph of g , the x -axis, the y -axis, and the vertical line $x = 1$, as shown in Figure 1. Find the area of region R . Show the setup for your calculations.
- Part B**
- Region R , described in part A, is the base of a solid. For this solid, each cross section perpendicular to the x -axis is a rectangle whose height is $\frac{1}{3}$ times the length of its base in region R . Write, but do not evaluate, an integral expression that gives the volume of the solid.
- Part C**
- The shaded region in Figure 1 is bounded by the graphs of f and g on the interval from $x = 0$ to $x = a$. Find the area of the shaded region. Show the setup for your calculations.
- Part D**
- Let T be the region bounded by the graph of $x = h(y)$, the y -axis, and the horizontal line $y = 3.5$, as shown in Figure 2. Write, but do not evaluate, an integral expression that gives the volume of the solid generated when region T is revolved about the y -axis.