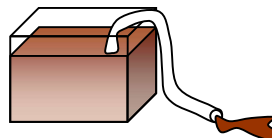


Chapter 7 Practice Test

Draw a sketch of the functions and solve for the values indicated in each problem.

1. Find the area between $f(x) = x + 1$ and $g(x) = -x^2 + 5x + 1$.
2. Find the volume of the solid defined by rotating $y = -x^2 + 4x$ about the x -axis.
3. Find the volume of the solid defined by rotating $y = -x^2 + 8x - 10$ about the line $y = 2$.
4. Find the volume of the solid bounded by $y = x^2 + 1$, $x = 2$ and $y = 0$ and rotated around the y -axis.
5. A force of 200 Newtons stretches a spring 0.3 meters. How much work is done in stretching the spring from 0.2 to 0.5 centimeters?
6. A gas with an initial volume of 4 liters and a constant pressure of 2.4 atmospheres expands to a volume of 10 liters. Find the work done by the expanding gas.
7. A rectangular tank with a base of 5 feet by 6 feet and a height of 4 feet is full of Dr. Pepper. The Dr. Pepper weighs 64 pounds per cubic foot. How much work is done in pumping all the Dr. Pepper out over the top edge of the tank in order to empty all of the tank?



8. Find M_x , M_y , \bar{x} , and \bar{y} for the lamina of uniform density ρ bounded by the graph of $f(x) = 8 - x^2$ and $y = 2x - 1$.
9. Find the fluid force on the vertical side of a tank where the dimensions are given in feet on the diagram shown below. Assume that the tank is full of water which has a weight-density of 63 pounds per cubic foot.

