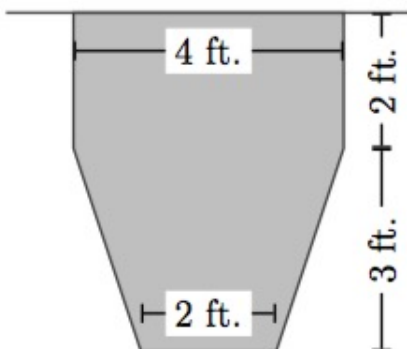
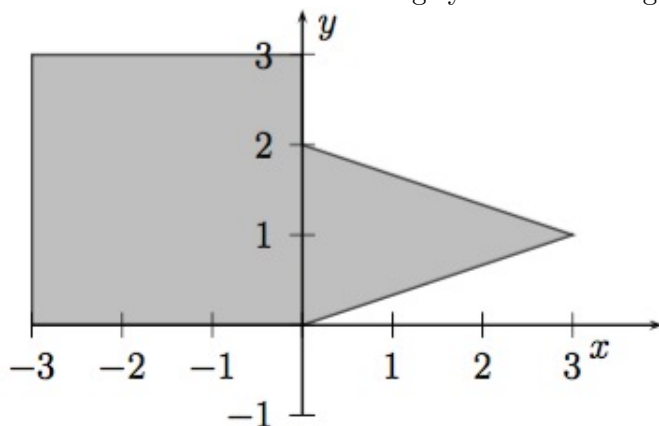


- Calculate the hydrostatic force on the top of a cube shaped box with side length 0.5 feet. The top of the box is 4 feet below the surface of the water (use 62.5 lbs per cubic foot as the weight density of water).
- Calculate the hydrostatic force on one of the sides of a cube shaped box with side length 0.5 feet. The top of the box is 4 feet below the surface of the water (use 62.5 lbs per cubic foot as the weight density of water).
- What is the hydrostatic force on a 2 foot by 2 foot square diamond aquarium window whose top is at the surface of the water if the density of water is 62.5 lbs/ft³?
- A swimming pool has a circular window of radius 1.2 meters in a side wall. The water level in the pool is exactly 0.2 meters above the horizontal diameter. Set up (do not evaluate) an integral that represents the force of the water on the window. (Assume that the side wall is vertical)
- A large whale aquarium has a circular window at one end of radius 3 ft. The center of the window is 10 ft below the surface
 - Set up an integral to evaluate the force of water on the window. Use ρ for the density of water.
 - Find the force on the window by using the Theorem of Pappus. Leave your answer in terms of ρ .
- Calculate the hydrostatic force on the end of a trough with the end shaped like a parabola with the equation $y = x^2$. The trough is 1 foot high and is filled to the top with liquid that has a weight-density of 60 lbs/ft³.
- What is the hydrostatic force on an inverted isosceles triangle aquarium window with base 2 ft. and height 3 ft. whose top is 3 ft. below the surface of the water if the density of water is 62.5 lbs/ft³?
- An isosceles trapezoid is the end of a water trough filled to the top with water. Find the hydrostatic force on the trapezoid to the nearest pound if the top base is 3 ft., the bottom base is 2 ft., and the height is 1 ft. The density of water is 62.5 lbs/ft³.
- What is the hydrostatic force on the given plate whose top is at the surface of the water if the weight-density of water is ρg lbs/ft³?

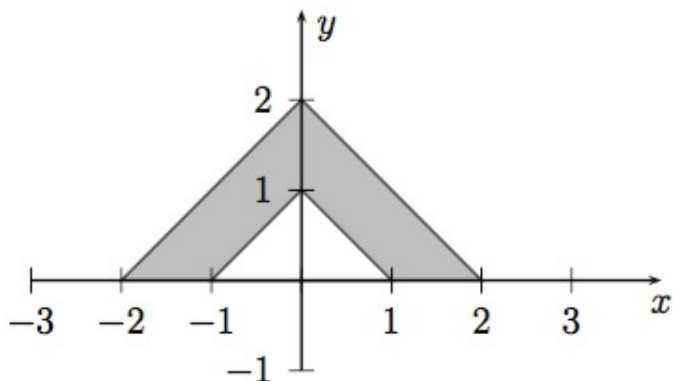


- Find the centroid of a system with 4 particles: a particle of mass 2 at point (0, 2), a particle of mass 5 at point (3, 3), a particle of mass 9 at point (4, 10), and a particle of mass 10 at point (5, -2).
- Find the centroid of the region bounded by the curves $y = x^2$ and $y = 2x$.

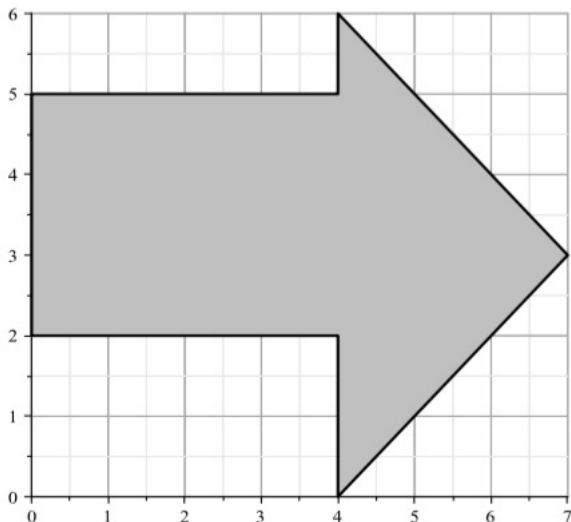
12. Find the centroid of the region bounded by the curves $y = x^3$, $x + y = 2$, and the y -axis.
13. Find the centroid of the following system consisting of a square and an isosceles triangle.



14. Find the centroid of the region between the two triangles in the xy -plane.



15. Find the y coordinate of the centroid of the shaded region below.



16. A region with area 5 lies in the first quadrant of the xy -plane. When the region is revolved about the x -axis, it sweeps out a volume of 15π . When revolved about the y -axis, it sweeps out a volume of 20π . Use the Theorem of Pappus to find the centroid of the region.