

4. Rotate the ellipse $\frac{x^2}{9} + \frac{y^2}{5} = 1$ about the x -axis. What is the volume of the resulting solid?
5. A rod of length 2 meters and density $\delta(x) = 3 - e^{-2x}$ is placed on the x -axis with one end at the origin. Find the coordinate of the center of mass of the rod.
6. A reservoir has a dam at one end. The dam is a rectangular wall, 1000 feet long and 50 feet high. What is the total force exerted by the water against the dam. (The density $\times g$ of water is 62.4.)

7. A gas station stores its gas in a tank underground. The tank is a right circular cylinder lying horizontally on its side. If the radius of the cylinder is 4 feet, its length is 12 feet and its top is 10 feet underground, find the total amount of work needed to pump all the gasoline out of the tank (assume the tank is full). (Gasoline weighs 42 lbs/ft³.)

8. Use some 4th degree Taylor polynomial to estimate the value of $\cos(1)$.

9. Write the Taylor polynomial, about 1, for the function $f(x) = \frac{1}{x}$ and decide the interval of convergence of the polynomial.

10. Find the radius of convergence for the polynomial $\frac{x}{3} + \frac{2x^2}{5} + \frac{3x^3}{7} + \frac{4x^4}{9} + \frac{5x^5}{11} + \dots$ and decide what happens at each endpoint of this interval.