

4. Find the volume of the solid obtained by rotating the region bounded by $y = x^2$ and $y = x^3$ about the x -axis.
5. Find the volume of the solid obtained by rotating the region bounded by $y = x^3$, $y = 8$ and $x = 0$ about the y -axis.
6. What is average value of the function $\sin^9(x)\cos(x)$ on the interval $[0, \pi/2]$.

7. A 251 Newton force is required to stretch a spring from its natural length of 2 meters to 3 meters.

a. Find the spring constant k .

b. Find how much work is required to stretch the spring from 3 to 30 meters.

8. A large fish tank is 2 meters wide, 8 meters long, and 4 meters tall. The tank is full. How much work is required to pump out $1/2$ of the water? (The density of water is 1000 kg/m^3 and the acceleration due to gravity is $9.8 \text{ meters/second}$.)