

Math 1210-1 HW 15
Due Monday April 26, 2004

Please show all of your work and box your answer. Be sure to write in complete sentences when appropriate.

Work

1. How much work is done by lifting a 5-pound book 3 feet off the floor?
2. A 28-meter uniform chain with a mass of 20 kilograms is dangling from the roof of a building. How much work is needed to pull the chain up to the top of the building?
3. A water tank is in the form of a right circular cylinder with height 20 ft and radius 6 ft. If the tank is half full of water, find the work required to pump all of it over the top rim. (Note that 1 cubic foot of water weighs 62.4 lb.)
4. Repeat the previous problem assuming the tank is full of water, and the water is pumped to a point 10 ft above the top of the tank.
5. A force of 6 pounds is required to keep a spring stretched $\frac{1}{2}$ foot beyond its natural length. Find the value of the spring constant and the work done in stretching the spring $\frac{1}{2}$ foot beyond its natural length.
6. In the previous problem, how much work is required to stretch the spring 2 feet?
7. Write a summary of what you have learned in this class this semester.