

Math 102 — Work

Problem 1. A 100 meter rope of density 0.1 kilograms per meter is dangling off the side of a building. Find the work to lift the rope completely onto the top of the building.

Problem 2. A force of 2 Newtons compresses a spring 5 meters.

- a. Use this information to find the spring constant k .
- b. Find the work done in compressing the spring.

Problem 3. A tank with height 30 meters and square base with side length 4 meters is filled to a height of 20 meters with fluid. The fluid has density 2.2 kg per cubic meter. Set up an integral to find the work to pump the fluid to the top of the tank.