

3. [7 points] Emily is a physics teacher. She is demonstrating the physics of rocket-launching with a water rocket in her class today. The water rocket weighs 3 lbs on the ground, and Emily launches it straight up to 10 ft above the ground. During the launch, the rocket's weight decreases at constant rate (in lbs/ft) as the water is ejected from the rocket. When it reaches 10 ft above the ground, the rocket weighs 1 lb.
- a. [3 points] Calculate the weight of the rocket when it is a height h ft above the ground. Include units.
- b. [4 points] Write an expression involving integrals for the total work required to propel the rocket from the ground to a height of 10 feet above the ground (as described above). Do not evaluate any integrals in your expression. Include units.