**1.** An exceptionally thirsty polar weasel finds a convenient water basin, fed by a pure artesian spring pulling uncontaminated water from glacier depths. Suppose the basin, shown to the right, contains water 0.3ft deep when the weasel plugs the basin so that it does not refill. If the weasel then drinks the basin dry, how much work does it do in moving all of the water to the top of the basin? (The weight of water is 62.4 lb/ft^3.) (4 points)
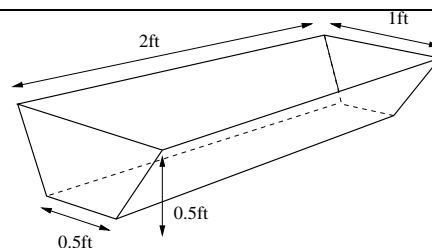
2. Let $g(t)$ be a function with the property that $g(T)$ gives the fraction of students in math 116 in the fall term who are no older than T years. Sketch a reasonable graph of $g(t)$. Is it a density function? (3 points)

3. Let $g(t)$ be the function in problem (2). What is the meaning of $\int_{17}^{19} g'(t)\,dt$? (3 points)