Evaluating double integrals

Math 251 Calculus 3

October 30, 2013

WeBWorK problem 14

A pile of earth standing on flat ground has height 36 meters. The ground is the (x, y)-plane. The origin is directly below the top of the pile and the z-axis is upward. The cross-section at height z is given by $x^2 + y^2 = 36 - z$ for $0 \leq z \leq 36$, with x, y, and z in meters.

- What equation gives the edge of the base of the pile?
- What is the area of the base of the pile?
- What equation gives the cross-section of the pile with the plane $z = 6$?
- What is the area of the cross-section $z = 6$?
- What is $A(z)$, the area of a horiztonal cross-section at height z?
- What is the volume of the pile?