## **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  $0 \le z \le 36$ , 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 horizontal cross-section at height z?
- What is the volume of the pile?