

1. Calculate  $\int_0^1 (2x + 1)dx$  using **the definition** of the integral.
2. Let  $R$  be the region enclosed by the graphs of  $f(x) = 2x - x^2$  and  $g(x) = x$ .
  - (a) Find the area of  $R$ .
  - (b) Find the volume of the solid obtained by rotating  $R$  around the  $x$ -axis.
3. A pyramid is 410 ft high and has a square base 755 ft by 755 ft. The stone making up the pyramid has density 200 lb per cubic ft. Find the total amount of work done in building the pyramid.