

**521 Analysis I Spring 2011**  
**Homework 9 extra problem**

**Problem 9.1** Let  $a > 0$  and

$$F(x) = \begin{cases} \pi, & x < a \\ 4 + x - a, & a \leq x < 2a \\ 4 + a + (x - a)^2, & x \geq 2a. \end{cases}$$

Sketch the graph of  $F$ .

To test your understanding of how a Riemann-Stieltjes integral works, compute

$$\int_0^{3a} x dF(x).$$

You should get  $\frac{29}{3}a^3 + \frac{3}{2}a^2 + (4 - \pi)a$ .