

PRINT Your Name: \_\_\_\_\_

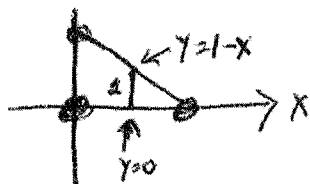
Quiz 6 — October 7, 2013 — Section 1 — 3:30 — 4:20

Remove everything from your desk except a pencil or pen.

Circle your answer. **Show your work.** Your work should be correct and coherent. **Draw** a meaningful picture.

The quiz is worth 5 points.

Consider a solid  $S$ . The base of  $S$  is the triangular region with vertices  $(0, 0)$ ,  $(1, 0)$ , and  $(0, 1)$ . The cross-sections of  $S$  perpendicular to the  $x$ -axis are squares. Find the volume of  $S$ .



Check the  $x$ -axis from  $x=0$  to  $x=1$ .

The slice of  $S$  with  $x$ -coordinate  $x$  is a square with side length:

$a$  of volume  $a^2 t$ ,

with  $a=1-x$  and  $t=dx$ . This slice has Vol  $a^2 t = (1-x)^2 dx$

The Vol of the solid is  $\int_0^1 (1-x)^2 dx = -\frac{(1-x)^3}{3} \Big|_0^1 = \frac{1}{3}$