

**CSCI4390/6390 – Data Mining**  
**Fall 2006, Quiz 3**  
**Total Points: 15**

Name: \_\_\_\_\_

1. Let a  $d$ -dimensional hypercube of length  $l \leq 1$  be enclosed within the unit  $d$ -dimensional hypercube.

(a) (5 points) What should the length  $l$  be so that the inner hypercube encloses a certain fraction, say  $\alpha$ , of the volume of the unit hypercube?

(b) (5 points) Let  $\alpha = 0.1$ . Find  $l$  for  $d = 1$  and  $d = 2$ .

(c) (5 points) What happens to the length  $l$  as  $d$  tends to infinity? What can you conclude?