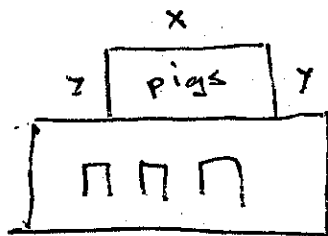


Name: _____

Quiz 16, section 4.7

1. (10 pts) Carl and Ryan are living in the $\Pi \Pi \Pi$ fraternity house (that's 'pi pi pi' for all you dessert lovers). They decide they want to start a pig farm on the premises, so they want to build a rectangular area on the side of the frat house to house their porcine pets, as shown. We wisely avoid asking them what they intend to do with the pigs. They have 150 feet of fence. Find the dimensions they should use to maximize the enclosed area.



$$\begin{aligned} \text{area } A &= xy \\ \text{fence } 150 &= x + 2y \end{aligned}$$

$$x = 150 - 2y$$

$$A = (150 - 2y)y = 150y - 2y^2$$

$$A' = 150 - 4y = 0$$

$$y = \frac{150}{4} = 37.5 \quad \text{ft}$$

$$x = 150 - 2y = 75 \quad \text{ft}$$