8. At noon, Alex exits Smith Hall at point A on the map shown and starts walking at constant speed directly towards the Art building (point B), hoping for a cup of coffee at Parnassus. She gets to point B after 60 seconds.

At the same time (noon), Matt is at point C (near the Music building), walking straight towards point D at a uniform speed of 2 feet per second, rushing to his next class.

Point B is 60 feet east and 110 feet north of point A. Point D is 80 feet due north of point A, and point C is 70 feet due east of point D.

Impose a coordinate system with the origin at point A.
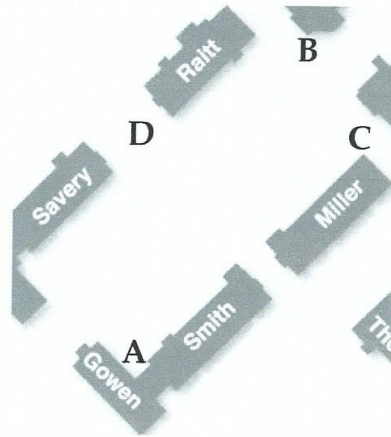
(a) Determine parametric equations for Alex's coordinates t seconds past noon.

$$\left(t, \frac{11}{6}t\right) \qquad \text{From last week}$$

(b) Determine parametric equations for Matt's coordinates t seconds past noon.

$$(70 - 2t, 80) \qquad \text{From last week}$$

(c) What is the closest distance between Matt and Alex during their treks across the Quad?

3. You have 1000 meters of fencing with which to build two enclosures. One enclosure will be an isosceles right triangle, and the other will be a rectangle that is four times as long as it is wide. The figure below shows the two shapes.
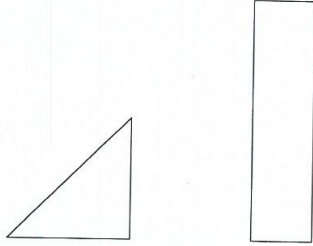
What should the dimensions of the rectangular enclosure be to **minimize** the combined total area of the two enclosures?